MANUAL 5903 DVD Recorder & Video Cassette Recorder

PHILIPS
MAGNAVOX

DVDR600VR/37
MRV700VR/17

Philips Consumer Electronics Company

A Division of Philips Electronics North America Corporation

MANUAL 5903

Technical Service Data

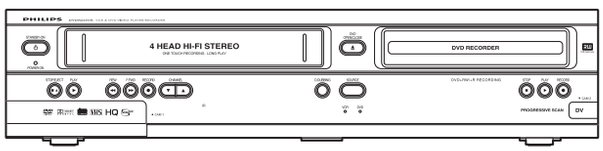
Service Solutions Group
Technical Publications Dept.
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.
Jefferson City,TN 37760

Sec. 1A: Main Section
(DVDR600VR/37, MRV700VR/17)
Specifications
Operating Instructions
Adjustment Procedures
Schematic Diagrams and CBA's
Exploded Views
Cabinet & Electrical Parts Lists

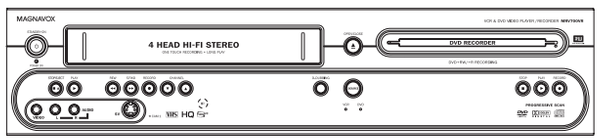
Sec. 2: Deck Mechanism Section

Sec. 3: DVD+RW Basic Engine
VAD8041 12NC: 3122 785 14850
For repair information on the Basic Engine.

DVD Recorder & Video Cassette Recorder
Service Manual



PHILIPS
Model: DVDR600VR/37



MAGNAVOX
Model: MRV700VR/17

DVD Recorder & Video Cassette Recorder

First Issue: 9/04

©2004 Philips Consumer Electronics Company

Philips Consumer Electronics Company
A Division of Philips Electronics North America Corporation

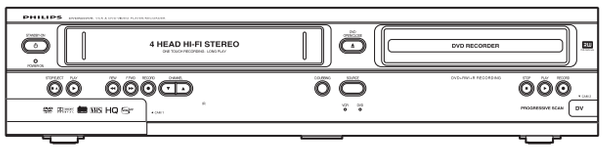
MANUAL 5903

Technical Service Data

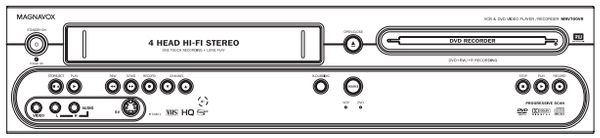
Service Solutions Group
Technical Publications Dept.
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.
Jefferson City,TN 37760

Sec. 1A: Main Section
(DVDR600VR/37, MRV700VR/17)
Specifications
Operating Instructions
Adjustment Procedures
Schematic Diagrams and CBA's
Exploded Views
Cabinet & Electrical Parts Lists

DVD Recorder & Video Cassette Recorder Service Manual



PHILIPS
Model: DVDR600VR/37



MAGNAVOX
Model: MRV700VR/17

DVD Recorder & Video Cassette Recorder

First Issue: 9/04

©2004 Philips Consumer Electronics Company

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.**

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

**** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.**

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

*** Broken Line** — - — - — - —

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

TABLE OF CONTENTS

[Main Section]

Page

SPECIFICATIONS 1-1-1
IMPORTANT SAFETY PRECAUTIONS 1-2-1
STANDARD NOTES FOR SERVICING 1-3-1
FUNCTION INDICATOR SYMBOLS 1-4-1
PREPARATION FOR SERVICING 1-5-1
OPERATING CONTROLS AND FUNCTIONS 1-6-1
REMOTE CONTROL OPERATION 1-7-1
CABINET DISASSEMBLY INSTRUCTIONS 1-8-1
HOW TO INITIALIZE THE DVD RECORDER 1-8-8
ELECTRICAL ADJUSTMENT INSTRUCTIONS 1-9-1
  Adjustment Points and Test Points 1-9-2
FIRMWARE RENEWAL MODE 1-10-1
REWORK PROCEDURE IEEE UNIQUE NUMBER 1-10-2
BLOCK DIAGRAMS
  Servo/System Control Block Diagram 1-11-1
  Sub System Control Block Diagram 1-11-2
  Video Block Diagram 1-11-3
  Video Input/Output Select Block Diagram 1-11-4
  Audio Block Diagram 1-11-5
  Audio Input/Output Select Block Diagram 1-11-6
  Hi-Fi Audio Block Diagram 1-11-7
  Power Supply Block Diagram 1-11-8
SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS
  Main 1/7 Schematic Diagram Parts Location Guide <VCR Section> 1-12-2
  Main 1/7 Schematic Diagram <VCR Section> 1-12-3
  Main 2/7, Sensor, Function & Jack-B Schematic Diagram <VCR Section> 1-12-5
  Main 3/7 Schematic Diagram <VCR Section> 1-12-7
  Main 4/7 Schematic Diagram <VCR Section> 1-12-9
  Main 4/7 Schematic Diagram Parts Location Guide <VCR Section> 1-12-11
  Main 5/7 Schematic Diagram Parts Location Guide <VCR Section> 1-12-12
  Main 5/7 Schematic Diagram <VCR Section> 1-12-13
  Main 6/7 Schematic Diagram <VCR Section> 1-12-15
  Main 6/7 Schematic Diagram Parts Location Guide <VCR Section> 1-12-17
  Main 7/7 Schematic Diagram Parts Location Guide <VCR Section> 1-12-18
  Main 7/7 & DVD Open/Close Schematic Diagram <VCR Section> 1-12-19
  Main CBA Parts Location Guide <VCR Section> 1-12-21
  Main CBA Top View <VCR Section> 1-12-23
  Main CBA Bottom View <VCR Section> 1-12-25
  Function CBA Top/Bottom View <VCR Section> 1-12-27
  Jack-B CBA Top/Bottom View <VCR Section> 1-12-27
  Front Schematic Diagram <VCR Section> 1-12-29
  Front CBA Top/Bottom View <VCR Section> 1-12-31
  Jack-A Schematic Diagram <VCR Section> 1-12-33
  Jack-A CBA Top/Bottom View <VCR Section> 1-12-33
  Power Supply Schematic Diagram <VCR Section> 1-12-35
  Power Supply CBA Top View <VCR Section> 1-12-37
  Power Supply CBA Bottom View <VCR Section> 1-12-39
  Junction-A CBA Top/Bottom View <VCR Section> 1-12-40
  Junction-B CBA Top/Bottom View <VCR Section> 1-12-40
  CPU 1/2 Schematic Diagram <DVD Section> 1-12-41
  CPU 2/2 Schematic Diagram <DVD Section> 1-12-43
  Digital Board Unit 1/10 Schematic Diagram <DVD Section> 1-12-45
  Digital Board Unit 2/10 Schematic Diagram <DVD Section> 1-12-47
  Digital Board Unit 3/10 Schematic Diagram <DVD Section> 1-12-49
  Digital Board Unit 4/10 Schematic Diagram <DVD Section> 1-12-51
  Digital Board Unit 5/10 Schematic Diagram <DVD Section> 1-12-53
  Digital Board Unit 6/10 Schematic Diagram <DVD Section> 1-12-55
  Digital Board Unit 7/10 Schematic Diagram <DVD Section> 1-12-57
  Digital Board Unit 8/10 Schematic Diagram <DVD Section> 1-12-59
  Digital Board Unit 9/10 Schematic Diagram <DVD Section> 1-12-61
  Digital Board Unit 10/10 Schematic Diagram <DVD Section> 1-12-63
  Digital Board Unit Top View <DVD Section> 1-12-65
  Digital Board Unit Bottom View <DVD Section> 1-12-67
  Digital Board Unit Test Point View <DVD Section> 1-12-69
WAVEFORMS 1-13-1
WIRING DIAGRAM 1-14-1
SYSTEM CONTROL TIMING CHARTS 1-15-1
IC PIN FUNCTION DESCRIPTIONS 1-16-1
LEAD IDENTIFICATIONS 1-17-1
ELECTRICAL PARTS LIST 1-18-1
EXPLODED VIEWS 1-19-1
MECHANICAL PARTS LIST 1-20-1

SPECIFICATIONS

< VCR Section >

Description	Unit	Minimum	Nominal	Maximum	Remark
1. Video					
1-1. Video Output (PB)	Vp-p	0.8	1.0	1.2	SP Mode
1-2. Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-3. Video S/N Y (R/P)	dB	40	48		SP Mode
1-4. Video Color S/N AM (R/P)	dB	38	44		SP Mode
1-5. Video Color S/N PM (R/P)	dB	36	40		SP Mode
1-6. Resolution (R/P)	Line	220	240		SP Mode
2. Servo					
2-1. Jitter Low (R/P)	μsec		0.05	0.15	SP Mode
2-2. Wow & Flutter (R/P)	%		0.15	0.35	SP Mode
3. Normal Audio					
3-1. Output (PB)	dBV	-10	-6	-2	SP Mode
3-2. Output (R/P)	dBV	-10	-6	-2	SP Mode
3-3. S/N (R/P)	dB	40	44		SP Mode
3-4. Distortion (R/P)	%		1.5	5.0	SP Mode
3-5. Freq. Response (R/P) at 100Hz	dB	-9.5	-3.5	2.5	SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-6.5	-0.5	5.5	SP Mode
4. Tuner					
4-1. Video output (E-E)	Vp-p	0.8	1.0	1.2	E-E Mode
4-2. Video S/N (E-E)	dB	40	46		E-E Mode
4-3. Audio output (E-E)	dBV	-10	-6	-2	E-E Mode
4-4. Audio S/N (E-E)	dB	40	44		E-E Mode
5. Hi-Fi Audio					
5-1. Output (PB)	dBV	-12	-8	-4	SP Mode
5-2. Output (R/P)	dBV	-12	-8	-4	SP Mode
5-3. S/N (A WTD)	dB		70		SP Mode
5-4. Freq. Response at 20Hz	dB	-4	0	+4	SP Mode
at 20kHz	dB	-4	0	+4	SP Mode

Other Specifications	
Operating Temperature	41°F (5°C) to 104°F (40°C)
Relative Humidity	30% to 80%
Power Requirements	AC 120 V +/- 10%, 60 Hz +/- 0.5%
Power Consumption	Power on: 43 W, Power off: 9.0 W
Dimensions	17.1” (W) x 3.9” (H) x 10.3” (D) / 435 mm (W) x 100 mm (H) x 262 mm (D)
Weight	11.0 lbs. (5.0 kg)

Test Tape VFMS0001H6

Note: Nominal specs represent the design specs. All units should be able to approximate these. Some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specs.

< DVD Section >

ITEM	CONDITIONS	UNIT	NOMINAL	LIMIT
1. VIDEO				
1-1. Video Output	75 ohm load	Vp-p	1.0	
1-2. S-Video Output				
Y (Luminance)	75 ohm load	Vp-p	1.0	
C (Chrominance)	75 ohm load	Vp-p	0.300	
1-3. Component Output				
Y (Luminance)	75 ohm load	Vp-p	1.0	
Pb (Chrominance)	75 ohm load	Vp-p	0.7	
Pr (Chrominance)	75 ohm load	Vp-p	0.7	
2. AUDIO				
2-1. Frequency Response				
DVD	fs = 96 kHz	Hz	4 ~ 44 k	
	fs = 48 kHz	Hz	4 ~ 22 k	
Video CD	fs = 44.1 kHz	Hz	4 ~ 20 k	
Audio CD	fs = 44.1 kHz	Hz	4 ~ 20 k	
2-2. Signal/Noise Ratio	1 kHz	dB	80	
2-3. Dynamic Range	1 kHz	dB	80	
2-4. Crosstalk	1 kHz	dB	80	
2-5. Distortion/Noise	1 kHz	dB	80	

NOTES:

1. All Items are measured without pre-emphasis unless otherwise specified.
2. Power supply : AC120 V 60 Hz
3. Load imp. : 100 k ohm
4. Ambient temperature : 5 °C ~ 40 °C

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced**.**

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1)Wires covered with PVC tubing

2)Double insulated wires

3)High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1)Insulation tape

2)PVC tubing

3)Spacers

4)Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Clearance Distance (d), (d')
120 V	≥ 3.2mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

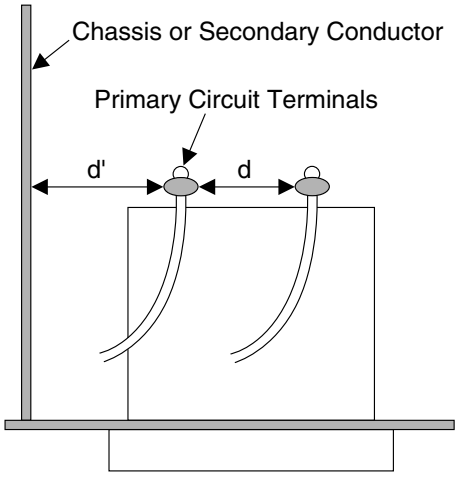


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

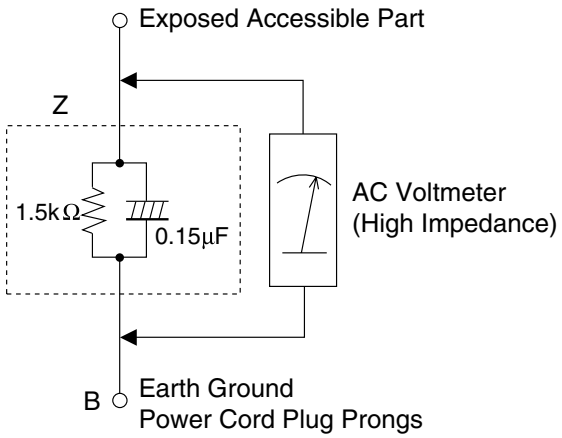


Fig. 2

Table 2: Leakage current ratings for selected areas

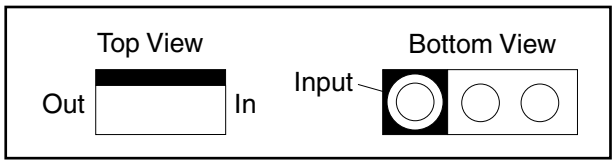
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
120 V	0.15μF CAP. & 1.5kΩ RES. Connected in parallel	i≤0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

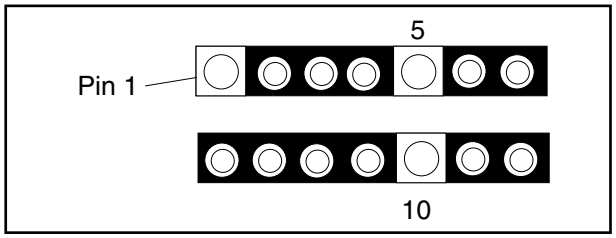
STANDARD NOTES FOR SERVICING

Circuit Board Indications

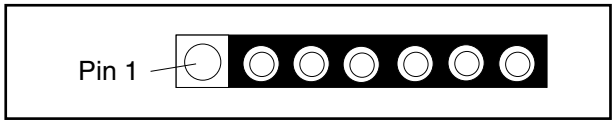
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

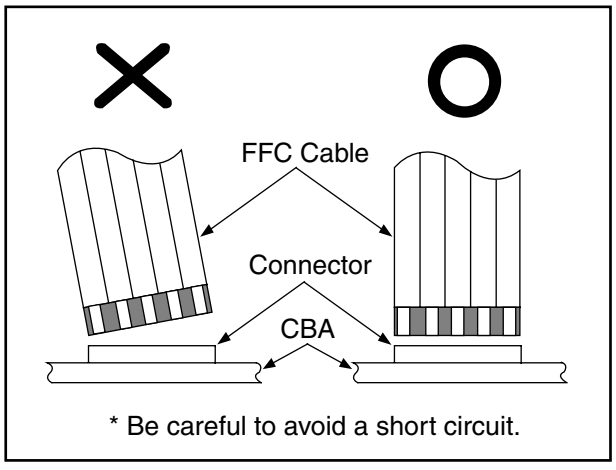


3. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



Pb (Lead) Free Solder

When soldering, be sure to use the Pb free solder.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:.

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

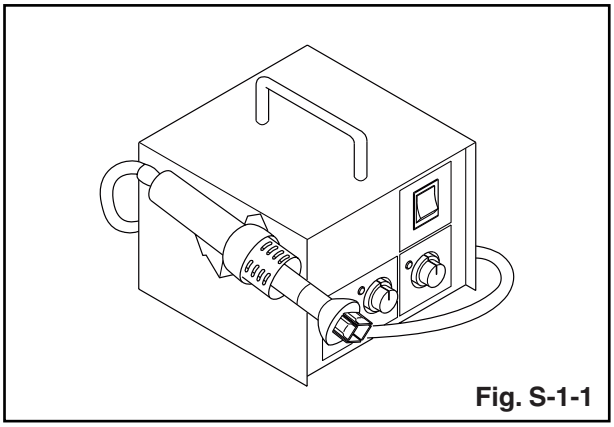


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

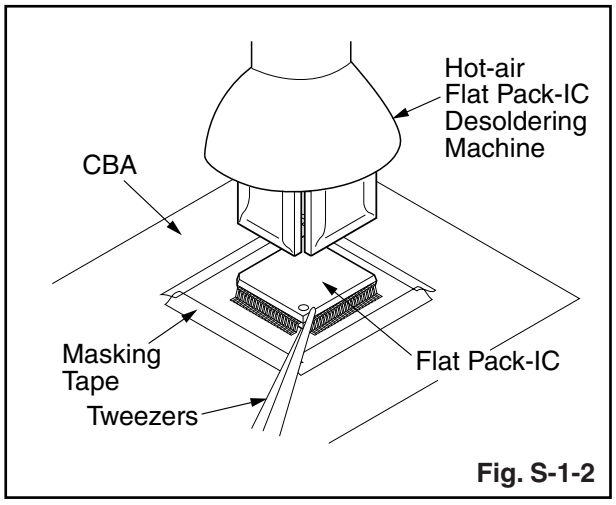


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

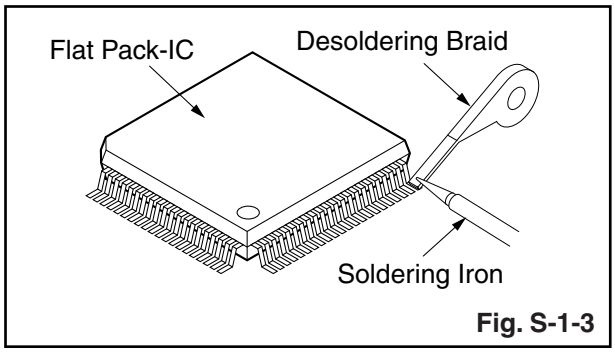


Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

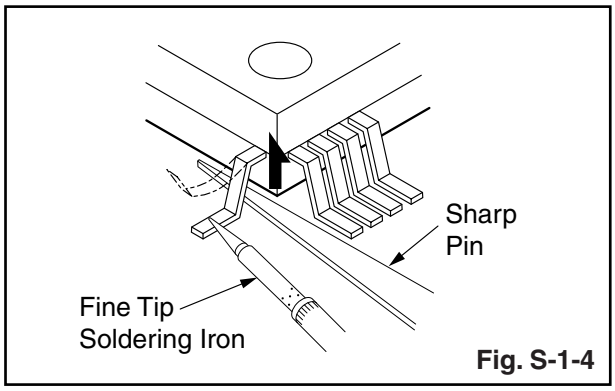


Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

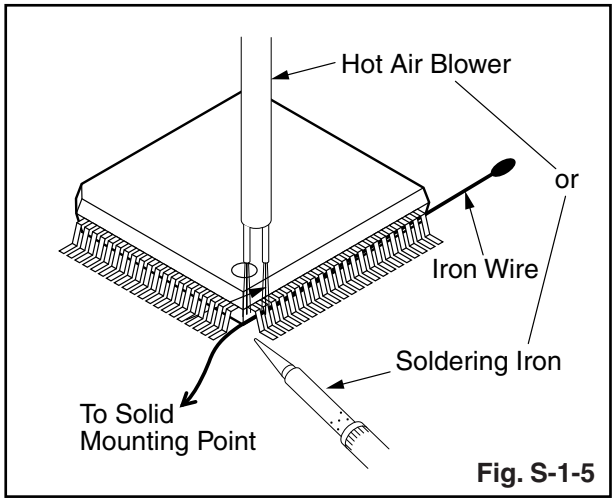


Fig. S-1-5

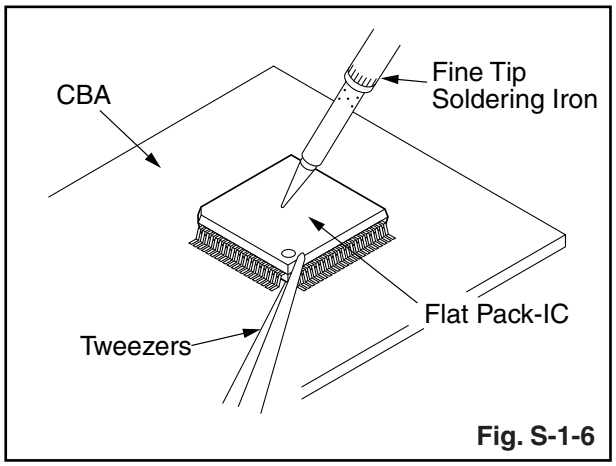


Fig. S-1-6

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

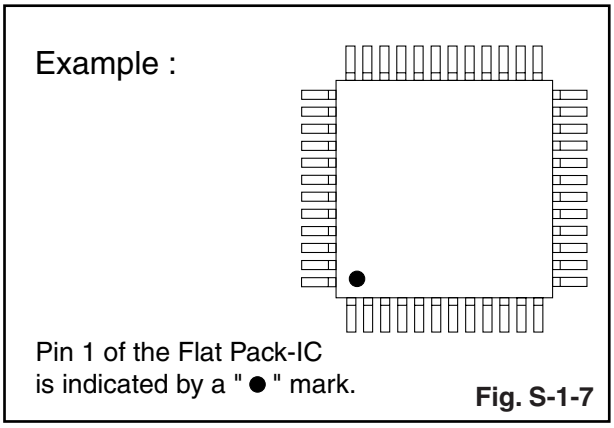


Fig. S-1-7

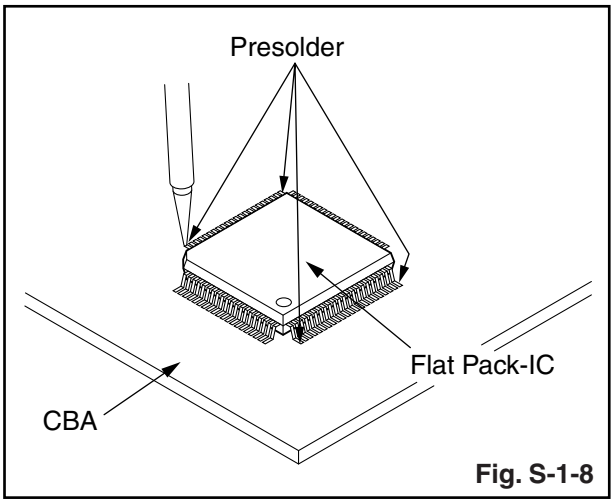


Fig. S-1-8

Instructions for Handling Semi-conductors

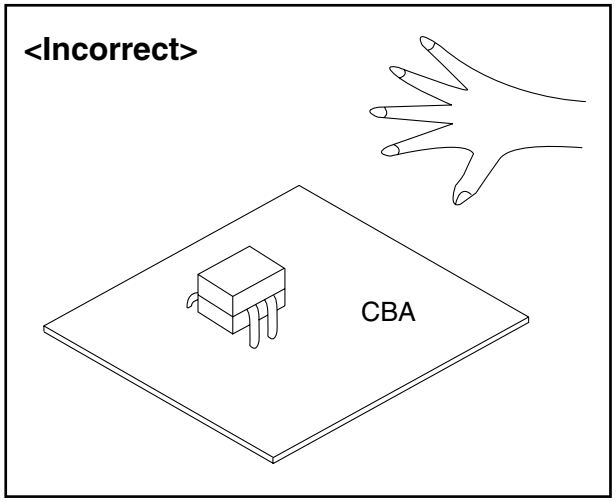
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

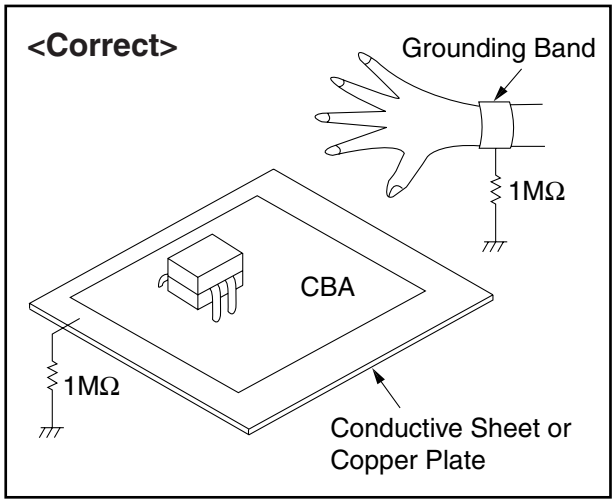
1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

(1) Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.





FUNCTION INDICATOR SYMBOLS

< VCR Section >

Note:

If a mechanical malfunction occurs, the power is turned off. When the power comes on again after that by pressing [STANDBY-ON] button, an error message is displayed on the TV screen for 5 seconds.

Led Mode	Indicator Active
When reel or capstan mechanism is not functioning correctly	"⏏ R" is displayed on a TV screen. (Refer to Fig. 1.)
When tape loading mechanism is not functioning correctly	"⏏ T" is displayed on a TV screen. (Refer to Fig. 2.)
When cassette loading mechanism is not functioning correctly	"⏏ C" is displayed on a TV screen. (Refer to Fig. 3.)
When the drum is not working properly	"⏏ D" is displayed on a TV screen. (Refer to Fig. 4.)
P-ON+5V Power safety detection	"⏏ P" is displayed on a TV screen. (Refer to Fig. 5.)

TV screen

When reel or capstan mechanism is not functioning correctly

Fig. 1

When tape loading mechanism is not functioning correctly

Fig. 2

When cassette loading mechanism is not functioning correctly

Fig. 3

When the drum is not working properly

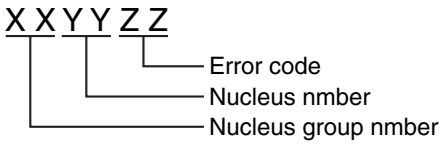
Fig. 4

P-ON+5V Power safety detection

Fig. 5

< DVD Section >

Note: If an error occurs, a message with the error number appears on the screen.



Description	Error No.	Error Description
Sends the device id and the module ids and revisions of the Domino IC to the stdout port.	010000	Getting the information succeeded.
Generates a test-image of a selected video standard on selected video output on the digital board. When no input is given, the default values will be used. Use nucleus DS_ANAB_VideoRouting to route the video signal on the analogue board output.	010100	Generating the test image succeeded.
	010101	Failed to set up DENC.
	010102	Invalid user input.
	010103	Test image not supported.
Switches the test-image off.	010200	Stopping the test image generation succeeded.
Generate an audio sine signal on the audio output of the digital board.	010300	The sine signal was successfully generated.
	010301	Generating the sine test audio failed.
Stop generating the audio sine signal.	010400	Switching off the audio sine signal succeeded.
	010401	Failed to stop sine test audio.
Generate an audio sine signal on the audio output of the digital board for 4 seconds.	010500	The sine signal burst was successfully generated.
	010501	Generating the sine burst failed.
	010502	Failed to stop the sine burst.
Mute the audio outputs of the digital board.	010600	Muting the audio succeeded.
De-mute the audio outputs of the digital board.	010700	De-muting the audio succeeded.
Check the connection to the DV-LED on the digital board by switching it on.	010800	Switching the DV-LED on succeeded.
Switch off the DV-LED on the digital board.	010900	Switching the DV-LED off succeeded
Peek a value on a specified address.	011200	Peeking on the specified address succeeded.
	011201	No address input.
	011202	Invalid address.
Poke a value on a specified address.	011300	Poking the specified address succeeded.
	011301	No address input.
	011302	Invalid address/data.
Check the communication between the IIC controller of the Chrysalis and the EEPROM.	030000	Something is properly read so the communication is OK.
	030004	The communication with the NVRAM failed.
	030005	The IIC bus initialisation failed.
Check whether the EEPROM can be written to and read from.	030100	The write-read test succeeded.
	030101	The IIC bus initialisation failed.
	030102	The communication with the NVRAM failed.
	030103	The read back value is different from the written value.
Make the EEPROM empty, containing all zeroes.	030200	The clearing of the NVRAM succeeded.
	030201	There was an IIC error.
	030202	Clearing the NVRAM failed.
Modifies one or more locations in NVRAM and updates the checksum of the section modified.	030300	Modifying the NVRAM contents succeeded.
	030301	Unable to initialise NVM.
	030302	Modifying the NVRAM contents failed.
	030303	Length out of range.
	030304	Unable to decode length.
	030305	Offset out of range.
	030306	unable to decode offset.
	030307	Unknown location specified.
	030308	No location is specified.
	030309	Number of values incorrect.
	030310	Error creating checksum.
	030311	Invalid data.

Description	Error No.	Error Description
Read out one or more locations in the NVRAM.	030400	Value read.
	030401	Unable to initialise NVM.
	030402	Reading the NVRAM contents failed.
	030403	Length out of range.
	030404	Unable to decode length.
	030405	Offset out of range.
	030406	Unable to decode offset.
	030407	Unknown location specified.
	030408	No location is specified.
Write to a specific memory address.	040200	Writing to the SDRAM succeeded.
	040201	No address input.
	040202	No data input.
	040203	Address is not dividable by 4.
	040204	Invalid data.
	040205	Address out of range.
	040206	Invalid address.
Read from a specific memory address.	040300	Reading from the SDRAM succeeded.
	040301	No address input.
	040302	Address is not dividable by 4.
	040303	Address out of range.
	040304	Invalid address.
Get the device (revision) type information of the FLASH IC. (manufacturer and device ID)	050000	Getting the information from the FLASH succeeded.
Check whether the FLASH can be written to and read from.	050100	The FLASH write-read test succeeded.
	050101	Wrong BALO signature.
	050102	Wrong CONS signature.
	050103	Invalid CONS base.
	050104	Invalid CONS end address.
	050105	All bits in the TEST region are filled with 0.
	050106	The WriteRead test failed.
	050107	The Write Failed.
Read from a specific memory address.	050200	Reading the FLASH succeeded.
	050201	No address input.
	050202	Invalid address.
	050203	Address is out of range.
	050204	Address is not dividable by 2.
Check the checksum of the application partitions by recalculating and comparing partition checksums.	050300	The checksum is valid, the test succeeded.
	050301	Wrong BSTB signature.
	050302	Wrong BSTB checksum.
	050303	Wrong BALO signature.
	050304	Wrong BALO checksum.
	050305	Wrong CONS signature.
	050306	Wrong CONS checksum.
	050307	Invalid BALO end address.
	050308	Invalid CONS base.
	050309	Invalid CONS end address.
Calculate the checksum over all memory addresses. Used to check entire FLASH contents.	050400	Calculating the checksum over all addresses succeeded.
Calculate a checksum over a selected number of address locations.	050500	Calculating the checksum over selected addresses succeeded.
Get the device (revision) type information of the VIP IC.	060000	Getting the information from the VIP succeeded.
	060001	The IIC bus initialisation failed.
	060002	The communication with the VIP failed.
Check the communication between the IIC controller of the Domino and the VIP IC.	060100	Communicating with the VIP succeeded.
	060001	The IIC bus initialisation failed.
	060002	The communication with the VIP failed.
Switch the clock output on.	060200	Switching the clock output on succeeded.
	060201	Switching the clock output on failed.

Description	Error No.	Error Description
Switch the clock output off.	060300	Switching the clock output off succeeded.
	060301	Switching the clock output off failed.
Select an input video path to be switched to the analogue output of the VIP.	060400	Selecting the input of the VIP succeeded.
	060401	The user provided wrong input.
	060402	The VIP was not accessible.
	060405	This mode not available on SAA7118.
Get the device (revision) type information of the 1394 Physical layer IC.	070100	Getting the information from the physical layer IC succeeded.
	070101	Missing PHY clock.
	070102	Time-out error.
	070103	1394 chip is not IEEE 1394a-2000 compliant.
Check the accessibility of the 1394 Physical layer IC by writing to and reading from a specific address.	070300	Communicating with the physical layer IC succeeded.
	070301	Missing PHY clock.
	070302	Time-out error.
	070303	Register write test failed.
Route a DV stream containing an audio and video signal through the physical IC to the Domino. This will be loopthrough to the video output of Domino.	070400	Routing the signals succeeded.
	070405	Failed to initialise DENC.
Check whether a DV node can be detected by the hardware.	070500	The node was detected OK.
	070504	No node was detected.
Check the device type of the DENC in use.	080100	Communicating with the progressive scan DENC-IC succeeded.
	080101	The IIC bus initialisation failed.
	080102	No valid DENC detected.
Check the communication between the IIC controller of the Domino and the DENC-IC.	080100	Communicating with the progressive scan DENC-IC succeeded.
	080104	Communicating with the DENC failed.
	080105	The IIC bus initialisation failed.
Generate a test image and make it present on the DENC-IC.	080200	The generation of the test image succeeded.
	080201	The IIC bus initialisation failed.
	080202	Unable to initialise the DENC.
	080203	The generation of the test image failed.
Switch off the generated test image.	080300	Turning off the test image succeeded.
	080301	The IIC bus initialisation failed.
	080302	The test image could not be turned off.
Turn on MacroVision.	081000	Turning on MacroVision succeeded.
	081001	The IIC bus initialisation failed.
	081002	Unable to access DENC.
Turn off MacroVision.	081000	Turning off MacroVision succeeded.
	081001	The IIC bus initialisation failed.
	081002	Unable to access DENC.
Check the communication between the digital board and the recorder drive by issuing an Inquiry command over ATAPI bus.	090000	Communicating with recorder drive succeeded.
	090001	Recorder drive init fails.
	090002	Recorder drive command fails.
Reset the basic engine.	090100	Resetting the Basic Engine succeeded.
	090101	Recorder drive init fails.
Return the self-test results through the service port.	090200	Self test succeeded, no errors.
Get the version of the basic engine and that of the optical unit.	090300	BE version OK.
	090301	Recorder drive init fails.
	090302	Recorder drive command fails.
Open the tray of the basic engine.	090400	The command executed successfully.
	090401	Recorder drive init fails.
	090402	Recorder drive command fails.
Close the tray of the basic engine.	090500	The command executed successfully.
	090501	Recorder drive init fails.
	090502	Recorder drive command fails.

Description	Error No.	Error Description
Write data to and read data from a DVD+RW disc through the basic engine for verification of the writing.	090600	The command executed successfully.
	090601	Sanyo drive init fails.
	090602	Failed to close tray.
	090603	Failed to get disc type.
	090604	Not DVD+RW disc.
	090605	Buffer wait failed.
	090606	Write command failed. Sensekey = XX,YY,ZZ.
	090607	Failed to synchronize cache. Sensekey = XX,YY,ZZ.
	090608	Read command failed. Sensekey = XX,YY,ZZ.
	090609	Data read back is different from written data.
Write data to and read data from a DVD+R disc through the basic engine for verification of the writing.	090700	The command executed successfully.
	090701	Sanyo drive init fails.
	090702	Failed to close tray.
	090703	Failed to get disc type.
	090704	Not DVD+R disc.
	090705	Buffer wait failed.
	090706	Write command failed. Sensekey = XX,YY,ZZ.
	090707	Failed to synchronize cache. Sensekey = XX,YY,ZZ.
	090708	Read command failed. Sensekey = XX,YY,ZZ.
	090709	Data read back is different from written data.
	090710	Failed to read back NWA.
	090711	Disc full, insert new DVD+R.
Retrieve the statistical information from the basic engine.	090800	The command executed successfully.
	090801	There was a time-out while communicating.
	090802	The Basic Engine returned an unexpected result.
	090803	The BE returned an error code.
	090804	No acknowledge received from BE.
	090805	Communicating with the Basic Engine failed.
	090806	The BE returned no info.
Reset the statistical information in the basic engine.	090900	The command executed successfully.
	090901	There was a time-out while communicating.
	090902	The Basic Engine returned an unexpected result.
	090903	The BE returned an error code.
	090904	No acknowledge received from BE.
	090905	Communicating with the Basic Engine failed.
Get the error log from the basic engine.	091000	The command executed successfully.
	091001	There was a time-out while communicating.
	091002	The Basic Engine returned an unexpected result.
	091003	The BE returned an error code.
	091004	No acknowledge received from BE.
	091005	Communicating with the Basic Engine failed.
	091006	The BE returned no info.
Reset the error log in the basic engine.	091100	The command executed successfully.
	091101	There was a time-out while communicating.
	091102	The Basic Engine returned an unexpected result.
	091103	The BE returned an error code.
	091104	No acknowledge received from BE.
	091105	Communicating with the Basic Engine failed.

Description	Error No.	Error Description
This test measures the average jitter and bler values. A formatted DVD must be loaded into the engine before executing this nucleus.	091200	Optimising jitter succeeded.
	091201	There was a time-out while communicating.
	091202	The Basic Engine returned an unexpected result.
	091203	The Basic Engine returned an error code.
	091204	No acknowledge received from BE.
	091205	Unable to send tray in.
	091206	Unable to read the disc.
	091207	No disc is loaded.
	091208	Unknown disc is loaded.
	091209	Unable to enter service mode.
Check whether there is a disc inside the BE.	092100	There was a disc inside the set.
	092101	Unable to load the tray.
	092102	Error received from BE.
Read the TOC from the disc. This gives a good indication if the BE works properly.	092400	A disc is loaded, TOC info if echoed.
	092401	Unable to load the tray.
	092402	The BE has not returned TOC info.
	092403	Error received from BE.
Enables Automatic Pattern Verification tool on DVD+RW disc. Start, stop and type of pattern to be used can be configured by the user. Return pass/fail result.	092600	The command executed successfully.
	092601	Not enough input parameters.
	092602	Invalid start address.
	092603	Invalid End address.
	092604	Invalid pattern.
	092605	Sanyo drive init fails.
	092606	Failed to close tray.
	092607	Failed to get disc type.
	092608	Not DVD+RW disc.
	092609	Buffer wait failed.
	092610	Write command failed. Sensekey = XX,YY,ZZ.
	092611	Failed to synchronize chase. Sensekey = XX,YY,ZZ.
	092612	Read command failed. Sensekey = XX,YY,ZZ.
	092613	Data read back is different from written data.
Enables Automatic Pattern Verification tool on DVD+R disc. Start, stop and type of pattern to be used can be configured by the user. Return pass/fail result. Note that the nucleus does not check that the write address is the correct next available address according to the DVD+R disc. This must be taken care of by the user, otherwise the write command will fail.	092700	The command executed successfully.
	092701	Not enough input parameters.
	092702	Invalid start address.
	092703	Invalid End address.
	092704	Invalid pattern.
	092705	Sanyo drive init fails.
	092706	Failed to close tray.
	092707	Failed to get disc type.
	092708	Not DVD+R disc.
	092709	Buffer wait failed.
	092710	Write command failed. Sensekey = XX,YY,ZZ.
	092711	Failed to synchronize chase. Sensekey = XX,YY,ZZ.
	092712	Read command failed. Sensekey = XX,YY,ZZ.
	092713	Data read back is different from written data.
Set the region code in the AV3.	092800	The command executed successfully.
	092801	There was a time-out while communicating.
	092802	The Basic Engine returned an unexpected result.
	092803	The BE returned an error code.
	092804	No acknowledge received from BE.
	092805	Communicating with the Basic Engine failed.
	092806	The user provided wrong input.

Description	Error No.	Error Description
Read the region code from the AV3.	092900	The command executed successfully.
	092901	There was a time-out while communicating.
	092902	The Basic Engine returned an unexpected result.
	092903	The BE returned an error code.
	092904	No acknowledge received from BE.
	092905	Communicating with the Basic Engine failed.
Reset the region counter in the AV3.	093000	The command executed successfully.
	093001	There was a time-out while communicating.
	093002	The Basic Engine returned an unexpected result.
	093003	The BE returned an error code.
	093004	No acknowledge received from BE.
	093005	Communicating with the Basic Engine failed.
Adjust the DVD-M (with the OPU) with PCBA. (So adjusts the two PCBS to each other)	093100	The command executed successfully.
	093101	There was a time-out while communicating.
	093102	The Basic Engine returned an unexpected result.
	093103	The BE returned an error code.
	093104	No acknowledge received from BE.
	093105	Communicating with the Basic Engine failed.
	093106	Unable to enter service mode.
	093107	This nucleus is not supported by the engine.
Check the communication between the digital board and the DCB by issuing an echo command.	100000	Communicating with the DCB succeeded.
	100001	DCB could not be accessed by the analogue board.
	100002	There was no response from the analogue board.
	100003	The error code returned from the analogue board is unknown.
	100004	There was no response from the front panel.
Get the version of the DCB	100100	Retrieving the version of the DCB succeeded.
	100101	DCB could not be accessed by the analogue board.
	100102	There was no response from the analogue board.
	100103	The error code returned from the analogue board is unknown.
Light the entire display of the DCB, and clear the display after confirmation.User confirmation is necessary.The REC and PLAY keys on the local keyboard are used for this confirmation.The PLAY key confirms that the test pattern is OK and the REC key indicates an error. The STOP key is used to exit this nucleus at any time. The keyboard can also be used for the same purpose. The O or o key confirms that the test pattern is OK and the N or n key indicates the user wants to go to the next test or that there is an error. The rest of the keys of the keyboard are used to exit this nucleus at any time.	100200	Lighting the entire display succeeded.
	100201	DCB could not be accessed by the analogue board.
	100202	There was no response from the analogue board.
	100203	The error code returned from the analogue board is unknown.
	100206	The DCB did not light all labels.
	100207	The user skipped the rest of the test.
	100208	The user returned an unknown confirmation.
Check all keys of the keyboard by confirming the key-code displayed of each key. The PLAY key is used to confirm this nucleus. However, this key is also part of the keyboard test itself. Also the REC and STOP keys are used to exit the test.With the REC key the user signals a failure, while the STOP key signals the abortion of the test by the user. To use one of these three keys for confirmation,failure or abortion, the user needs to hold the key pressed down for more than one second. Pressing the keyboard will also stop the test at any time.	100400	All the keys on the keyboard have been pressed.
	100401	DCB could not be accessed by the analogue board.
	100402	There was no response from the analogue board.
	100403	The error code returned from the analogue board is unknown.
	100404	Not all the keys were pressed.
	100405	Invalid key code returned.
	100406	DCB Keyboard; test failed.
	100407	DCB Keyboard; test aborted.
	100408	Failed to clear FP buffer.
	100409	Test stopped from service port.

Description	Error No.	Error Description
Check the interface between the remote control and the DCB by checking the key-code displayed. At least one key must be tested. The test can be exited by pressing the STOP-,REC-, or PLAY-key on the local keyboard. The user should press PLAY to indicate a successful test. The REC-key is pressed if the test failed, and STOP can be pressed to abort the test. The keyboard can also be used for the same purpose .The O or o key stops the test and the N or n key indicates an error. The rest of the keys of the keyboard are used to abort this test at any time.	100500	Remote Control test succeeded.
	100501	DCB could not be accessed by the analogue board.
	100502	There was no response from the analogue board.
	100503	The error code returned from the analogue board is unknown.
	100504	DCB Remote control; no user input received.
	100505	DCB Remote control; test failed.
	100506	DCB Remote control; test aborted.
	100507	Failed to clear FP buffer.
	100508	Test stopped from service port.
Switch the record LED on, and after confirmation off. The user confirms by pressing the REC key, STOP key, or the PLAY key on the local keyboard. The PLAY key confirms that the LED is on and the REC key indicates an error. The STOP key signals the abortion of the test by the user. The keyboard can also be used for the same purpose . The O or o key confirms that the test pattern is OK and the N or n key indicates an error or that the user wants to go to the next test. The rest of the keys of the keyboard are used to exit this nucleus at any time. After that the nucleus switches the LED off.	100600	Switching Led on succeeded.
	100601	DCB could not be accessed by the analogue board.
	100602	There was no response from the analogue board.
	100603	The DCB did not light all the leds.
	100604	The user skipped the rest of the test.
	100605	The user returned an unknown confirmation:
	100606	The error code returned from the analogue board is unknown.
Check the communication between the digital board and the analogue board by issuing some echo string.	110000	Communicating with the analogue board succeeded.
	110001	The test returned the wrong string.
	110002	Communicating with the analogue board failed.
	110103	The analogue board returned an unexpected result.
	110104	Receiving character failed.
Check the communication between the digital board and the NVRAM on the analogue board.	110100	Communicating with the NVRAM on the analogue board succeeded.
	110101	The analogue board could not communicate with the NVRAM.
	110102	Communicating with the analogue board failed.
	110103	The analogue board returned an unexpected result.
	110104	The write-read test failed.
Check the communication between the digital board and the tuner on the analogue board.	110200	Communicating with the tuner on the analogue board succeeded.
	110201	The analogue board could not communicate with the tuner.
	110202	Communicating with the analogue board failed.
	110203	The analogue board returned an unexpected result.
Check the communication between the digital board and the data slicer on the analogue board.	110300	Communicating with the data slicer on the analogue board succeeded.
	110301	The analogue board could not communicate with the data slicer.
	110302	Communicating with the analogue board failed.
	110303	The analogue board returned an unexpected result.
Check the communication between the digital board and the sound processor on the analogue board.	110400	Communicating with the sound procesor on the analogue board succeeded.
	110401	The analogue board could not communicate with the sound processor.
	110402	Communicating with the analogue board failed.
	110403	The analogue board returned an unexpected result.
Check the communication between the digital board and the A/V-selector on the analogue board.	110500	Communicating with the A/V selector on the analogue board succeeded.
	110501	The analogue board could not communicate with the A/V selector.
	110502	Communicating with the analogue board failed.
	110503	The analogue board returned an unexpected result.
Get the hardware version of the analogue board.	110600	Reading the hardware version succeeded.
	110601	The segment containing the hardware version could not be found.
	110602	Communicating with the analogue board failed.
	110603	The analogue board returned an unexpected result.
Get the software version of the boot software of the analogue board.	110700	Reading the boot-software version succeeded.
	110701	The segment containing the boot-software version could not be found.
	110702	Communicating with the analogue board failed.
	110703	The analogue board returned an unexpected result.

Description	Error No.	Error Description
Get the software version of the download software of the analogue board.	110800	Reading the download-software version succeeded.
	110801	The segment containing the download-software version could not be found.
	110802	Communicating with the analogue board failed.
	110803	The analogue board returned an unexpected result.
Get the software version of the application software of the analogue board.	110900	Reading the application-software version succeeded.
	110901	The segment containing the application-software version could not be found.
	110902	Communicating with the analogue board failed.
	110903	The analogue board returned an unexpected result.
Get the software version of the diagnostic software of the analogue board.	111000	Reading the diagnostics-software version succeeded.
	111001	The segment containing the diagnostics-software version could not be found.
	111002	Communicating with the analogue board failed.
	111003	The analogue board returned an unexpected result.
Check the checksum of the several partitions by recalculating and comparing partition checksums.	111100	Checksum calculation succeeded.
	111101	Either the segment could not be found or the checksum was not correct.
	111102	Communicating with the analogue board failed.
	111103	Communicating with the analogue board failed.
	111104	The analogue board returned an unexpected result.
Perform the routing of the video paths on the analogue board.	111200	Routing the video on the analogue board succeeded.
	111201	Routing the video on the analogue board failed.
	111202	The user provided wrong input.
	111203	Communicating with the analogue board failed.
	111204	The analogue board returned an unexpected result.
Perform the routing of the audio paths on the analogue board.	111300	Routing the audio on the analogue board succeeded.
	111301	Routing the audio on the analogue board failed.
	111302	The user provided wrong input.
	111303	Communicating with the analogue board failed.
	111304	The analogue board returned an unexpected result.
Set the tuner to receive a valid audio and video signal	111400	Setting the tuner channel succeeded.
	111401	Setting the tuner channel failed.
	111402	The user provided wrong input.
	111403	Communicating with the analogue board failed.
	111404	The analogue board returned an unexpected result.
Perform an IIC write and read action on the analogue board	111500	Reading and writing IIC on the analogue board succeeded.
	111501	Reading or writing IIC on the analogue board failed.
	111502	The user provided wrong input.
	111503	Communicating with the analogue board failed.
	111504	The analogue board returned an unexpected result.
Set the clock to the value passed through in the YYYY MM DD HH MM SS format.	111600	Adjusting the clock succeeded.
	111601	Adjusting the clock failed.
	111602	The user provided wrong input.
	111603	Communicating with the analogue board failed.
	111604	The analogue board returned an unexpected result.
Generate a 1 kHz signal on pin 7 (INT) of the clock IC.	111700	Generating the signal on the designated pin succeeded.
	111701	Generating the signal on the designated pin failed.
	111702	Communicating with the analogue board failed.
	111703	The analogue board returned an unexpected result.
Store the clock IC correction value in NVRAM.	111800	Storing the correction value for the clock in NVRAM succeeded.
	111801	Storing the correction value for the clock in NVRAM failed.
	111802	Invalid input; default value stored.
	111803	Communicating with the analogue board failed.
	111804	The analogue board returned an unexpected result.
	111805	The user provided wrong input.

Description	Error No.	Error Description
Store the reference voltage for the tuner in NVRAM.	111900	Storing the reference voltage for the tuner in NVRAM succeeded.
	111901	Storing the reference voltage for the tuner in NVRAM failed.
	111902	The user provided wrong input.
	111903	Communicating with the analogue board failed.
	111904	The analogue board returned an unexpected result.
Store the frequency table in NVRAM. The frequency table is passed through the error-string provided to the nucleus.	112000	Downloading the frequency table in NVRAM succeeded.
	112001	Downloading the frequency table in NVRAM failed.
	112002	The user provided wrong input.
	112003	Communicating with the analogue board failed.
	112004	The analogue board returned an unexpected result.
Store the external presets in NVRAM.	112100	Storing the external presets in NVRAM succeeded.
	112101	Storing the external presets in NVRAM failed.
	112102	Communicating with the analogue board failed.
	112103	The analogue board returned an unexpected result.
Measure the audio signal corresponding to 0dB per channel and store it as correction value in NVRAM	112200	Storing the bargraph adjustment values in NVRAM succeeded.
	112201	Storing the bargraph adjustment values in NVRAM failed.
	112202	Communicating with the analogue board failed.
	112203	The analogue board returned an unexpected result.
Check communication to VCR module via SIO interface	112300	Communication to VCR succeeded.
	112201	Communicating with the analogue board failed..
	112302	Wrong SIO CRC received.
	112303	No SIO data received.
	112304	The analogue board returned an unexpected result.
Get the hardware version and type of the digital board.	120000	Getting the hardware version and type of the digital board succeeded.
Get the version of the boot stub software on the digital board.	120100	Getting the Boot software version succeeded.
Get the version of the download software on the digital board.	120200	Getting the Download software version succeeded.
Get the version of the application software on the digital board.	120300	Getting the Application software version succeeded.
	120301	Invalid CONS base address.
Upload the contents of the NVRAM on the analogue board or the digital board to the service PC, by using the X-modem protocol.	120500	Download succeeded.
	120501	User input is not valid.
	120502	Something went wrong while copying the data from NVRAM to SDRAM .
	120503	Something went wrong while transferring the data.
	120504	User cancelled the upload.
Download a file with the contents of the NVRAM for the analogue board or the digital board from the service PC to the recorder, by using the X-modem protocol.	120600	Download succeeded.
	120601	The write to NVRAM failed.
	120602	Timeout. Too many retries.
	120603	A file was sent with a wrong header.
	120604	User cancelled the download.
	120605	User input is not valid.
	120606	Unknown Error.
Set the IEEE 1394 unique ID.	120700	Setting the unique DV ID succeeded.
	120701	User input is not valid.
	120702	Setting the unique DV ID failed.
	120703	Write succeeded, but checksum is corrupt.
	120704	Error initialising I2C.
Get the IEEE1394 unique ID.	120800	Getting the unique DV ID succeeded.
	120801	Getting the unique DV ID failed.

Description	Error No.	Error Description
Perform an IIC write action on the digital board.	120900	Writing the data over IIC succeeded.
	120901	No input specified.
	120902	Invalid Bus ID number.
	120903	No IIC address.
	120904	Invalid IIC address.
	120905	No number of bytes input.
	120906	Invalid number of bytes.
	120907	No Data.
	120908	Number of bytes must be > 0 and < 18.
	120909	Invalid Data.
	120910	Not enough data bytes.
	120911	IIC Write failed.
	120912	IIC init failed.
Perform an IIC read action on the digital board.	121000	Reading the data over IIC succeeded.
	121001	No input specified.
	121002	Invalid Bus ID number.
	121003	No IIC address.
	121004	Invalid IIC address.
	121005	No number of bytes input.
	121006	Invalid number of bytes.
	121007	Number of bytes must be > 0 and < 101.
	121008	IIC Read failed.
	121009	IIC init failed.
Perform an UART write action on the digital board on a specified UART.	121100	Writing the bytes to the UART succeeded.
	121101	The user provided wrong input.
	121102	Writing to the UART failed.
Perform an UART read action on the digital board on a specified UART	121200	Reading the data from the UART succeeded.
	121201	The user provided wrong input.
	121202	Reading the data from the UART failed.
The video signal, which is determined by the user input, is routed from the input to the output. Input is set with the routing nucleus 1112. All outputs are enabled. Audio loopthrough is also enabled by this nucleus.	121300	Video LoopthroughStart succeeded.
	121302	Invalid input parameters.
	121303	Failed to initialise DENC.
	121304	Failed to initialise VIP.
	121305	DSW not ready for this setting yet.
Stop routing the audio/video input to all the outputs..	121400	VideoLoopthroughStop succeeded.
Set the slash version of the system.	121700	Setting the slash version succeeded.
	121701	Invalid slash version, default version is set.
	121702	Setting the slash version failed.
	121703	The user provided wrong input.
	121705	No DS errCode known for analogue board error:
	121706	There was no response from the analogue board.
Get the slash version of the system.	121800	Getting the slash version succeeded.
	121801	Getting the slash version failed.
	121802	The IIC write failed.
	121803	The IIC read failed.
	121804	There was no response from the analogue board.
	121805	No DS errCode known for analogue board error:
(Re-) Virginize the recorder. User data in the NVRAM of the analogue board is cleared.	121900	Virginization succeeded.
	121901	Virginization on the Analogue Board failed.
	121903	No DS errCode known for analogue board error:
	121904	There was no response from the analogue board.
Turn on the virgin mode functionality (e.g. the auto channel search upon startup).	122000	Turning on the virgin mode succeeded.
	122001	urning on VirginMode on the Analogue Board failed.
	122003	No DS errCode known for analogue board error:
	122004	There was no response from the analogue board.

Description	Error No.	Error Description
Turn off the virgin mode functionality (e.g. the auto channel search upon startup).	122100	Turning off the virgin mode succeeded.
	122101	Turning off VirginMode on the Analogue Board failed.
	122103	No DS errCode known for analogue board error:
	122104	There was no response from the analogue board.

PREPARATION FOR SERVICING

How to Enter the Service Mode

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP204 (S-INH) to GND. This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 1.

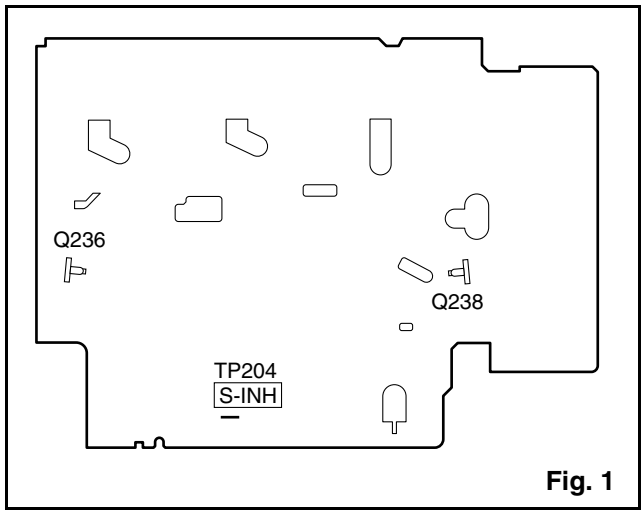


Fig. 1

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

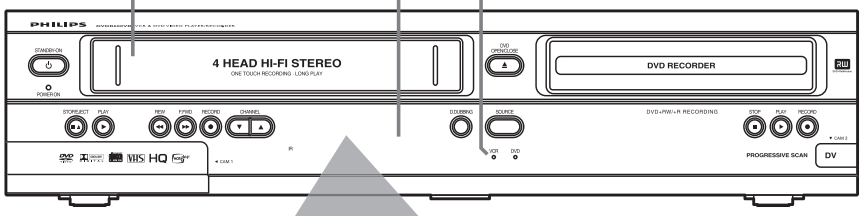
OPERATING CONTROLS AND FUNCTIONS

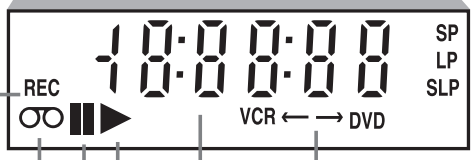
[DVDR600VR/37]

Cassette Compartment
Insert a video cassette here.

VCR Display Panel
Messages about current VCR operations appear here.
See Display Messages below.

VCR light (Orange)
This light appears when the Recorder is in VCR mode. You can only watch videotapes when the VCR light is on.





Appears during recording; flashes when recording is paused

Indicates the selected tape speed

Indicates a videotape is in the Recorder

Appears if videotape play is paused or during slow motion videotape play

Appears during videotape play

Indicates the elapsed playing time of a videotape; also displays the remaining time for an OTR

Appears during DVD to VCR or VCR to DVD duplication

STANDBY-ON ⏻ Button
Press to turn the power on or off.

POWER ON Light
Appears when the power is on

STOP ■ / EJECT ⏏ Button (VCR)
Press once to stop videotape playback. When play is stopped, press to eject the videotape.

PLAY ▶ Button (VCR)
Press to play a videotape.
Press to release Slow, Search, or Still mode and return to playback.

REW ◀◀ Button (VCR)
Press to rewind a videotape.

F.FWD ▶▶ Button (VCR)
Press to fast forward a videotape.

RECORD ● Button (VCR)
Press to start a videotape recording.
Press repeatedly to start a One-Touch Recording.

CHANNEL ▲/▼ Buttons
Press to select TV channels.

DVD OPEN/CLOSE ⏏ Button
Press to open or close the Disc Tray.

SOURCE Button
Press to select DVD mode or VCR mode. The DVD light appears in DVD mode. The VCR light appears in VCR mode.

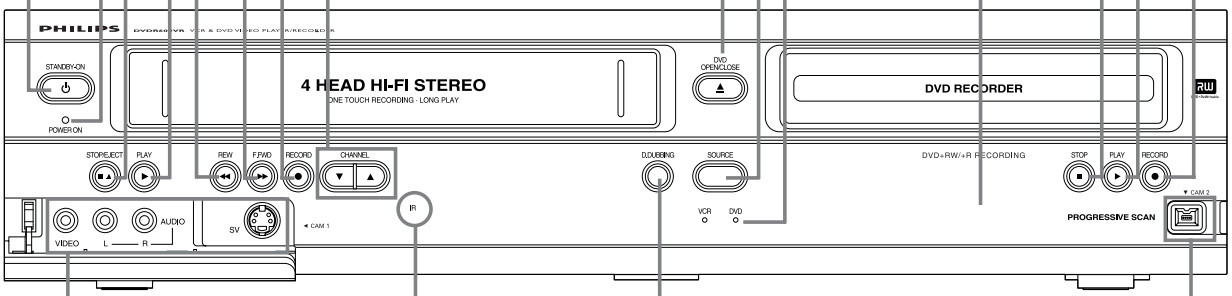
DVD Light
This light appears when the Recorder is in DVD mode.

RECORD ● Button (DVD)
Press to start a Disc recording.

PLAY ▶ Button (DVD)
Press to start Disc playback.

STOP ■ Button (DVD)
Press to stop Disc playback.

DVD Display Panel
Shows Disc status in DVD mode.



D.DUBBING Button
Press to start DVD to VCR or VCR to DVD duplication.

IR (infrared) Remote Sensor
Receives a signal from the Recorder's remote control so you can work your Recorder from a distance.
Point the remote here, not at your TV.

CAM1 jacks
SV (S-Video), VIDEO and AUDIO In
CAM2 jack
DV (digital video)
To access these jacks, flip down the door or rubber flap that covers the jacks. Use these jacks when connecting a Camcorder or other equipment to the Recorder. When recording material that is playing on the other equipment, choose the CAM channel that corresponds to the jack to which the equipment is connected.
If your Personal Computer has an IEEE 1394 Firewire connector, you may connect it to the Recorder's DV IN jack. Limited applications are available.

ANTENNA IN jack
Connect your antenna or Cable TV signal here.

VIDEO OUT jack (yellow)
Connect the yellow video cable (supplied) here and to the TV's Video In jack. This supplies the picture for both VCR and DVD modes.

EXT2 Jacks

VIDEO IN jack (yellow)
Connect a video cable from an optional Camcorder, VCR, or DVD Player here.

AUDIO IN Jacks / Left (white) and Right (red)
Connect audio cables coming from the audio out jacks of a camcorder, another VCR, another DVD Player, or Stereo here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

COMPONENT VIDEO OUT (Y P_B P_R) jacks (red, green, blue)
Connect component video cables (not supplied) here and to the Component Video In jacks of a TV.

EXT2 S-VIDEO IN jack
Use an S-video cable (not supplied) to connect this jack to the S-Video Out jack of optional additional equipment.

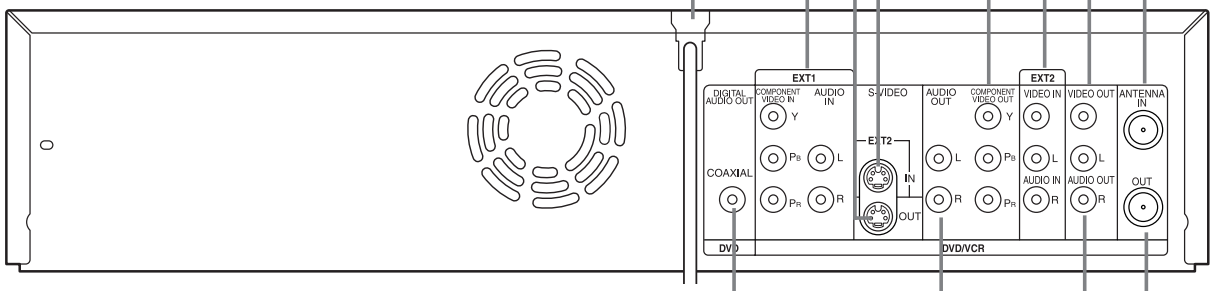
EXT2 S-VIDEO OUT jack
Connect an S-Video cable here and to a TV's S-Video In jack.

EXT1 jacks

AUDIO IN jacks / Left (white) and Right (red)
Connect audio cables here and to the AUDIO OUT jacks of other equipment.

COMPONENT VIDEO IN (Y P_B P_R) jacks (red, green, blue)
Connect these jacks to the Component Video Out jacks of optional video equipment (for example, a DVD Player).

AC Power Cord
Connect to a standard AC outlet to supply power to the Recorder.



DVD COAXIAL DIGITAL AUDIO OUT Jack
Connect a coaxial digital audio cable (not supplied) here and to the Coaxial Digital Audio In jack of a Stereo. This supplies audio only for DVD mode.

AUDIO OUT Jacks / Left (white) and Right (red)
Connect audio cables here and to the Audio In jacks of a TV or Stereo. These jacks supply audio for both DVD and VCR modes. Use these for a second connection to another TV, etc.

AUDIO OUT Jacks / Left (white) and Right (red)
Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks provide audio for both DVD and VCR modes.

(Antenna) OUT Jack
Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN jack on your TV, Cable Box, or Satellite Receiver.

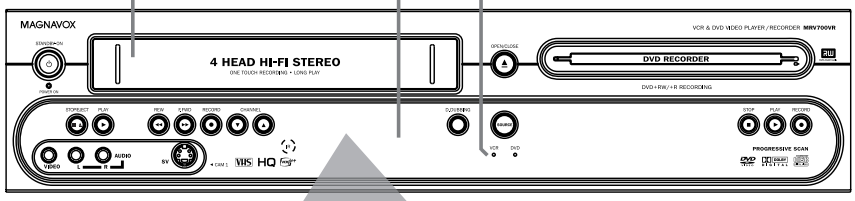
Helpful Hints

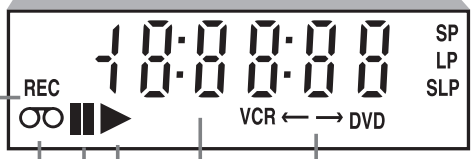
- *Use the same EXT (external) number for each pair of audio and video connections. For example, if you use EXT 2 S-VIDEO IN, use the EXT 2 AUDIO IN jacks.*
- *Do not touch the inner pins of the jacks. Electrostatic discharge may damage the unit permanently.*
- *You only need one audio and one video connection to a TV. You might not use all the jacks.*

Cassette Compartment
Insert a video cassette here.

VCR Display Panel
Messages about current VCR operations appear here.
See Display Messages below.

VCR light (Orange)
This light appears when the Recorder is in VCR mode. You can only watch videotapes when the VCR light is on.





Appears during recording; flashes when recording is paused

Indicates the selected tape speed

Indicates a videotape is in the Recorder

Appears if videotape play is paused or during slow motion videotape play

Appears during DVD to VCR or VCR to DVD duplication

Appears during videotape play

Indicates the elapsed playing time of a videotape; also displays the remaining time for an OTR

STANDBY-ON ⏻ Button
Press to turn the power on or off.

POWER ON Light
Appears when the power is on.

STOP ■ / EJECT ⏏ Button (VCR)
Press once to stop videotape playback. When play is stopped, press to eject the videotape.

PLAY ▶ Button (VCR)
Press to play a videotape.
Press to release Slow, Search, or Still mode and return to playback.

REW ◀◀ Button (VCR)
Press to rewind a videotape.

F.FWD ▶▶ Button (VCR)
Press to fast forward a videotape.

RECORD ● Button (VCR)
Press to start a videotape recording.

Press repeatedly to start a One-Touch Recording.

CHANNEL ▲ ▼ Buttons
Press to select TV channels.

DVD OPEN/CLOSE ⏏ Button
Press to open or close the Disc Tray.

SOURCE Button
Press to select DVD mode or VCR mode. The DVD light appears in DVD mode. The VCR light appears in VCR mode.

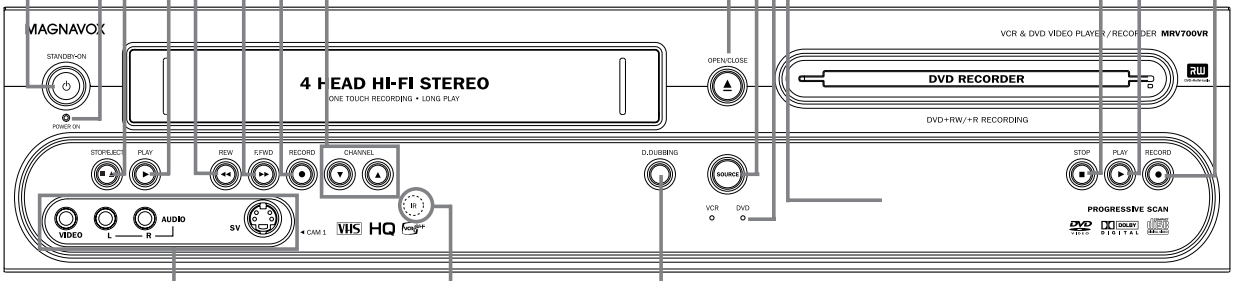
DVD Light
This light appears when the Recorder is in DVD mode.

RECORD ● Button (DVD)
Press to start a Disc recording.

PLAY ▶ Button (DVD)
Press to start Disc playback.

STOP ■ Button (DVD)
Press to stop Disc playback.

DVD Display Panel
Shows Disc status in DVD mode.



D.DUBBING Button
Press to start DVD to VCR or VCR to DVD duplication.

IR (infrared) Remote Sensor
Receives a signal from your Recorder's remote control so you can work your Recorder from a distance.
Point the remote here, not at your TV.

SV (S-Video), VIDEO and AUDIO In jacks
Use these jacks when connecting a Camcorder or other equipment to the Recorder. When recording material that is playing on the other equipment, choose the CAM channel that corresponds to the jack to which the equipment is connected.

ANTENNA IN jack
Connect your antenna or Cable TV signal here.

VIDEO OUT jack (yellow)
Connect the yellow video cable (supplied) here and to the TV's Video In jack. This supplies the picture for both VCR and DVD modes.

EXT2 Jacks

VIDEO IN jack (yellow)
Connect a video cable from an optional Camcorder, VCR, or DVD Player here.

AUDIO IN Jacks / Left (white) and Right (red)
Connect audio cables coming from the audio out jacks of a camcorder, another VCR, another DVD Player, or Stereo here. This will be useful if you want to copy a videotape or watch material that is playing on other equipment.

COMPONENT VIDEO OUT (Y PB PR) jacks (red, green, blue)
Connect component video cables (not supplied) here and to the Component Video In jacks of a TV.

EXT2 S-VIDEO IN jack
Use an S-video cable (not supplied) to connect this jack to the S-Video Out jack of optional additional equipment.

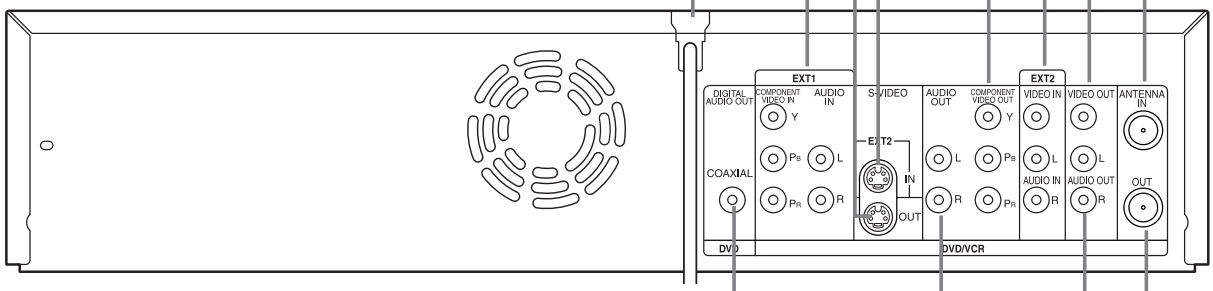
EXT2 S-VIDEO OUT jack
Connect an S-Video cable here and to a TV's S-Video In jack.

EXT1 jacks

AUDIO IN jacks / Left (white) and Right (red)
Connect audio cables here and to the AUDIO OUT jacks of other equipment.

COMPONENT VIDEO IN (Y PB PR) jacks (red, green, blue)
Connect these jacks to the Component Video Out jacks of optional video equipment (for example, a DVD Player).

AC Power Cord
Connect to a standard AC outlet to supply power to the Recorder.



DVD COAXIAL DIGITAL AUDIO OUT Jack
Connect a coaxial digital audio cable (not supplied) here and to the Coaxial Digital Audio In jack of a Stereo. This supplies audio only for DVD mode.

AUDIO OUT Jacks / Left (white) and Right (red)
Connect audio cables here and to the Audio In jacks of a TV or Stereo. These jacks supply audio for both DVD and VCR modes. Use these for a second connection to another TV, etc.

AUDIO OUT Jacks / Left (white) and Right (red)
Connect the supplied audio cables here and to the Audio In jacks of a TV or Stereo. These jacks provide audio for both DVD and VCR modes.

(Antenna) OUT Jack
Use the supplied RF coaxial cable to connect this jack to the ANTENNA IN jack on your TV, Cable Box, or Satellite Receiver.

Helpful Hints

- *Use the same EXT (external) number for each pair of audio and video connections. For example, if you use EXT 2 S-VIDEO IN, use the EXT 2 AUDIO IN jacks.*
- *Do not touch the inner pins of the jacks. Electrostatic discharge may damage the unit permanently.*
- *You only need one audio and one video connection to a TV. You might not use all the jacks.*

REMOTE CONTROL OPERATION

[DVDR600VR/37]

Number Buttons
Use to select TV channels. If you have Cable TV, channels 1-125 are available. If you have an antenna, channels 2-69 are available.
In DVD mode, press to select a Track or Chapter for playback.

VCR Button
Press to activate the remote control in VCR mode.
Press to select the VCR output mode.

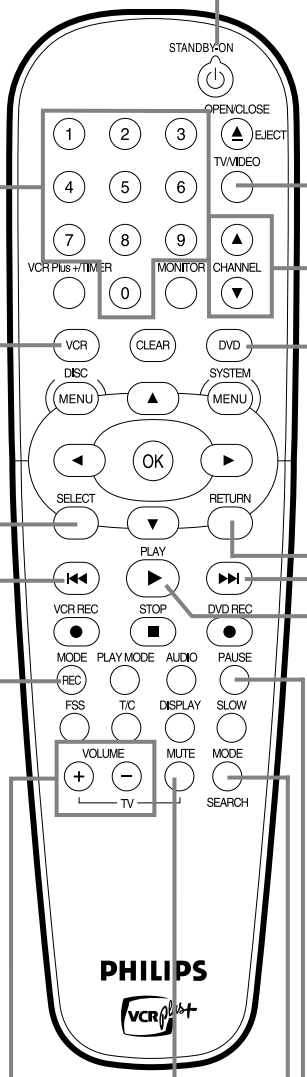
SELECT Button
In DVD mode, press to adjust timer recording settings.
Press to choose Interlaced or Progressive Scan.

Previous |◀◀ Button
In DVD mode, press to return to the beginning of the current Chapter/Track. Press repeatedly to return to previous Chapters/Tracks. Press and hold for two seconds to search backward during play.
In VCR mode, press to search a videotape.

REC MODE Button
Press to select a Disc or videotape recording speed. This determines the quality of the recording and the length of time you can record.

TV VOLUME +/– Buttons
Press to adjust the volume of some Philips TVs.
The TV VOLUME +/– buttons do not work with all TVs.

TV MUTE Button
Press to mute the sound on some Philips TVs.
The TV MUTE button does not work with all TVs.



STANDBY-ON ⏻ Button
Press to turn on or off the power of the Recorder.

TV/VIDEO Button
Press to switch between TV and Video positions. In Video position, watch a Disc/videotape or watch/record TV programs (changing channels at the Recorder).
Use TV position to watch TV channels (changing channels at the TV) or watch one program while recording another.

CHANNEL ▲/▼ Buttons
Press to change TV channels at the Recorder in Monitor or VCR mode.
Press to adjust videotape tracking.

DVD Button
Press to activate the remote control in DVD mode.
Press to select the DVD output mode.

RETURN Button
Press to go to a previous menu on a Video CD or some DVDs.

Next ▶▶| Button
In DVD mode, press to skip to the next Chapter or Track during play. Press and hold for two seconds to search forward during play.
In VCR mode, press to search a videotape.

PLAY ▶ Button
Press to begin Disc or videotape playback.

PAUSE Button
Press to pause Disc or videotape play or recording (except OTR).

SEARCH MODE Button
In VCR mode, press for a Time Search or an Index Search.

VCR Plus+/TIMER button
Press to set a timer recording with the VCR Plus+ programming system. Press to access or remove the Timer Recording menu in DVD mode.

DISC MENU Button
Press to access or remove a DVD Disc menu in DVD mode.

OK Button
Press to acknowledge or approve a menu selection.

▲▼◀▶ Buttons
Press to select menu items.

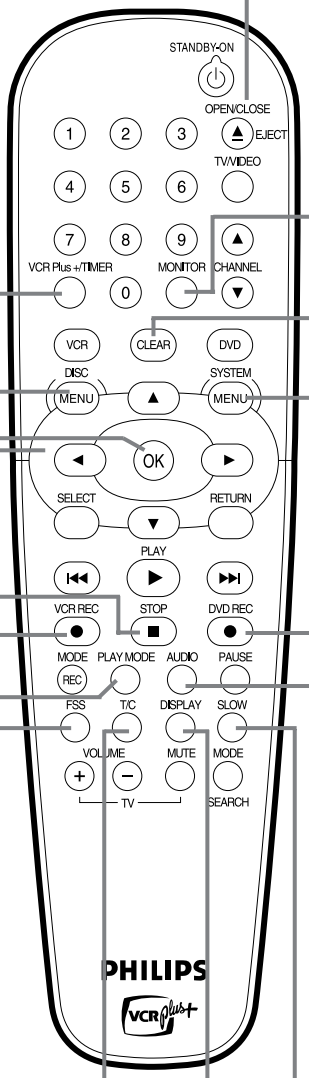
STOP ■ Button
Press to stop playback or recording.

VCR REC ● Button
Press to begin VCR recording. Press repeatedly to start a One-Touch Recording on a videotape.

PLAY MODE Button
Press during Disc play to choose a Repeat, Shuffle, or Scan mode.

FSS Button (Favorite Scene Selection)
Press to display or remove the Favorite Scene Selection menu during playback of a DVD+R or DVD+RW.

T/C Button (Title/Chapter)
Press to select "T" (Title/Track) or "C" (Chapter) in the Menu Bar. Then press ▲▼ to select the Title/Track/Chapter you want to play.
This button has no effect during Monitor mode.



OPEN/CLOSE/EJECT ▲ Button
Press to open or close the Disc tray in DVD mode. Press to eject a videotape in VCR mode.

MONITOR Button
Press to choose Disc mode or Monitor mode. In Disc mode, use the Index Picture Screen or view Disc playback. In Monitor mode, watch TV channels through the Recorder or make a Disc recording.

CLEAR Button
In DVD mode, press to delete the last entry of information into a menu. Press to clear a timer recording. In VCR mode, press to reset the videotape counter.

SYSTEM MENU Button
Press to access or remove the Recorder's Setup menu. This also puts the Recorder in DVD mode automatically.

DVD REC ● Button
Press to start a Disc recording. Press repeatedly to start a One-Touch Recording on a DVD+R or DVD+RW.

AUDIO Button
In DVD mode, press to select a different audio language during DVD play. Multiple languages must be available on the DVD. In VCR mode, press to select HIFI or MONO.

SLOW Button
Press to view a videotape in slow motion.

DISPLAY Button
In VCR mode, press to see status displays.

Helpful Hints

- *When VCR REC ● is pressed in DVD mode, the Recorder switches to VCR mode and starts recording on the videotape.*
- *When DVD REC ● is pressed in VCR mode, the Recorder switches to DVD mode and starts recording on the DVD+R/DVD+RW.*

[MRV700VR/17]

TV/VIDEO Button
Press to switch between TV and Video positions. In Video position, watch a Disc/videotape or watch/record TV programs (changing channels at the Recorder).
Use TV position to watch TV channels (changing channels at the TV) or watch one program while recording another.

PREV/REV |◀◀ Button
In DVD mode, press to return to the beginning of the current Chapter/Track. Press repeatedly to return to previous Chapters/Tracks. Press and hold for two seconds to search backward during play.
In VCR mode, press to search a videotape.

PAUSE ❚❚ Button
Press to pause Disc or videotape play or recording (except OTR).

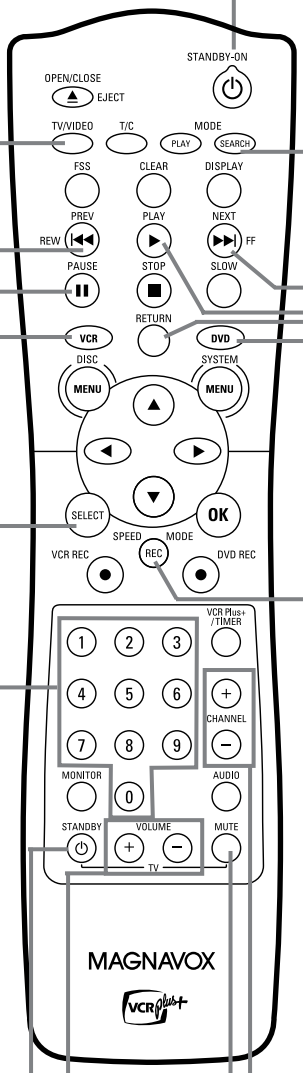
VCR Button
Press to activate the remote control in VCR mode.
Press to select the VCR output mode.

SELECT Button
In DVD mode, press to adjust timer recording settings.
Press to choose Interlaced or Progressive Scan.

Number Buttons
Use to select TV channels. If you have Cable TV, channels 1-125 are available. If you have an antenna, channels 2-69 are available. In DVD mode, press to select a Track or Chapter for playback.

TV STANDBY ⏻ Button
Press to turn on or off the power of some Magnavox TVs.

TV VOLUME +/– Buttons
Press to adjust the volume of some Magnavox TVs.
The TV VOLUME +/– buttons do not work with all TVs.



STANDBY-ON ⏻ Button
Press to turn on or off the power of the Recorder.

SEARCH MODE Button
In VCR mode, press for a Time Search or an Index Search.

NEXT/FF ▶▶| Button
In DVD mode, press to skip to the next Chapter or Track during play. Press and hold for two seconds to search forward during play.
In VCR mode, press to search a videotape.

PLAY ▶ Button
Press to begin Disc or videotape playback.

RETURN Button
Press to go to a previous menu on a Video CD or some DVDs.

DVD Button
Press to activate the remote control in DVD mode.
Press to select the DVD output mode.

REC SPEED/MODE Button
Press to select a Disc or videotape recording speed.
This determines the quality of the recording and the length of time you can record.

CHANNEL +/- Buttons
Press to change TV channels at the Recorder in Monitor or VCR mode.
Press to adjust videotape tracking during.

TV MUTE Button
Press to mute the sound on some Magnavox TVs.
The TV MUTE button does not work with all TVs.

OPEN/CLOSE/EJECT ▲ Button
Press to open or close the Disc tray in DVD mode. Press to eject a videotape in VCR mode.

T/C Button (Title/Chapter)
Press to select "T" (Title/Track) or "C" (Chapter) in the Menu Bar. Then press ▲▼ to select the Title/Track/Chapter you want to play.
This button has no effect during Monitor mode.

FSS Button (Favorite Scene Selection)
Press to display or remove the Favorite Scene Selection menu during playback of a DVD+R or DVD+RW.

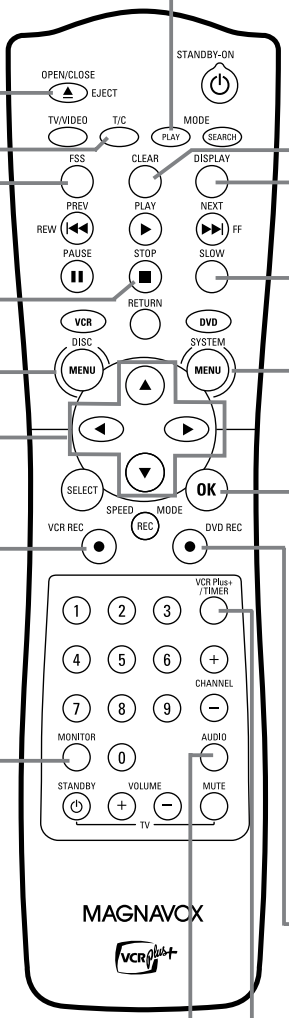
STOP ■ Button
Press to stop playback or recording.

DISC MENU Button
Press to access or remove a DVD Disc menu in DVD mode.

▲▼◀▶ Buttons
Press to select menu items.

VCR REC ● Button
Press to begin VCR recording. Press repeatedly to start a One-Touch Recording on a videotape.

MONITOR Button
Press to choose Disc mode or Monitor mode. In Disc mode, use the Index Picture Screen or view Disc playback. In Monitor mode, watch TV channels through the Recorder or make a Disc recording.



PLAY MODE Button
Press during Disc play to choose a Repeat, Shuffle, or Scan mode.

CLEAR Button
In DVD mode, press to delete the last entry of information into a menu. Press to clear a timer recording.
In VCR mode, press to reset the videotape counter.

DISPLAY Button
In VCR mode, press to see status displays.

SLOW Button
Press to view a videotape in slow motion.

SYSTEM MENU Button
Press to access or remove the Recorder's Setup menu. This also puts the Recorder in DVD mode automatically.

OK Button
Press to acknowledge or approve a menu selection.

DVD REC ● Button
Press to start a Disc recording. Press repeatedly to start a One-Touch Recording on a DVD+R or DVD+RW.

VCR Plus+/TIMER button
Press to set a timer recording with the VCR Plus+ programming system. Press to access or remove the Timer Recording menu in DVD mode.

AUDIO Button
In DVD mode, press to select a different audio language during DVD play. Multiple languages must be available on the DVD.
In VCR mode, press to select HIFI or MONO.

Helpful Hints

- *When VCR REC ● is pressed in DVD mode, the Recorder switches to VCR mode and starts recording on the videotape.*
- *When DVD REC ● is pressed in VCR mode, the Recorder switches to DVD mode and starts recording on the DVD+R/DVD+RW.*

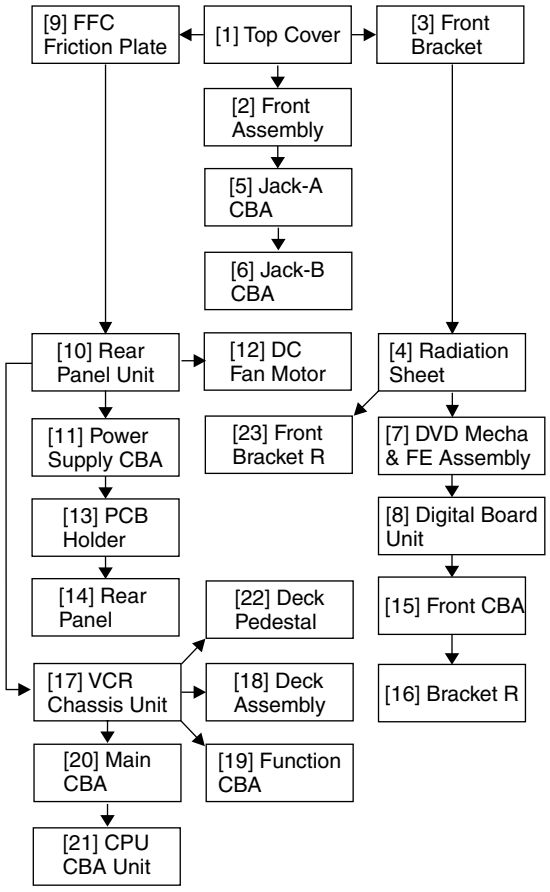
CABINET DISASSEMBLY INSTRUCTIONS

Comparison Chart of Models and Marks

Model	Mark
DVDR600VR/37	A
MRV700VR/17	B

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Cover	D1	6(S-1)	---
[2]	Front Assembly	D2	*2(L-1), Tray Panel, *5(L-2), *3(L-3), *CN204, *CN205	1 1-1 1-2 1-3 1-4 1-5 1-6 1-7
[3]	Front Bracket	D2	2(S-2), 2(S-3)	---
[4]	Radiation Sheet	D2	----------	---
[5]	Jack-A CBA	D3	3(S-5)	---
[6]	Jack-B CBA	D3	2(S-6)	---
[7]	DVD Mecha & FE Assembly	D4	2(S-7), 2(S-8), *CN207, *CN208, *CN211, *CN213, Connector 1109, Connector 1704	---
[8]	Digital Board Unit	D4	4(S-9), Connector 1102	---
[9]	FFC Friction Plate	D5	2(S-10)	---
[10]	Rear Panel Unit	D5	5(S-11), 3(S-12), (S-13), *CN209, *CN210	---
[11]	Power Supply CBA	D6	4(S-14), AC Cord, Earth Plate	---
[12]	DC Fan Motor	D6	2(S-15)	---
[13]	PCB Holder	D6	3(S-16)	---
[14]	Rear Panel	D6	----------	---
[15]	Front CBA	D7	3(S-17), *CN214	---
[16]	Bracket R	D7	2(S-18)	---
[17]	VCR Chassis Unit	D7	5(S-19), 5(S-20), (S-21)	---

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[18]	Deck Assembly	D8	(S-22), (S-23), Desolder	2 3
[19]	Function CBA	D8	Desolder	---
[20]	Main CBA	D8	----------	---
[21]	CPU CBA Unit	D8	4(S-24), *CN215, *CN216	---
[22]	Deck Pedestal	D9	8(S-25)	---
[23]	Front Bracket R	D9	(S-26), 2(S-27), iLink Cable **[A]**	---
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

Note:

(1): Identification (location) No. of parts in the figures

(2): Name of the part

(3): Figure Number for reference

(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 6(S-1) = six Screws (S-1),
5(L-1) = five Locking Tabs (L-1)

(5): Refer to “Reference Notes.”

Reference Notes

CAUTION 1: Locking Tabs (L-1), (L-2) and (L-3) are fragile. Be careful not to break them.

1-1. Connect the wall plug to an AC outlet and press the [OPEN/CLOSE] button to open the tray.

1-2. Remove the Tray Panel by releasing two locking tabs (L-1).

1-3. Press the [OPEN/CLOSE] button again to close the tray.

1-4. Press the [POWER] button to turn the power off.

1-5. Unplug the AC cord.

1-6. Disconnect connectors CN204 and CN205.

1-7. Release five Locking Tabs (L-2). Then release three Locking Tabs (L-3), and remove the Front Unit.

2. When reassembling, solder wire jumpers as shown in Fig. D8.

3. Before installing the Deck Assembly, be sure to place the pin of LD-SW on Main CBA as shown in Fig. D8. Then, install the Deck Assembly while aligning the hole of Cam Gear with the pin of LD-SW, the shaft of Cam Gear with the hole of LD-SW as shown in Fig. D8.

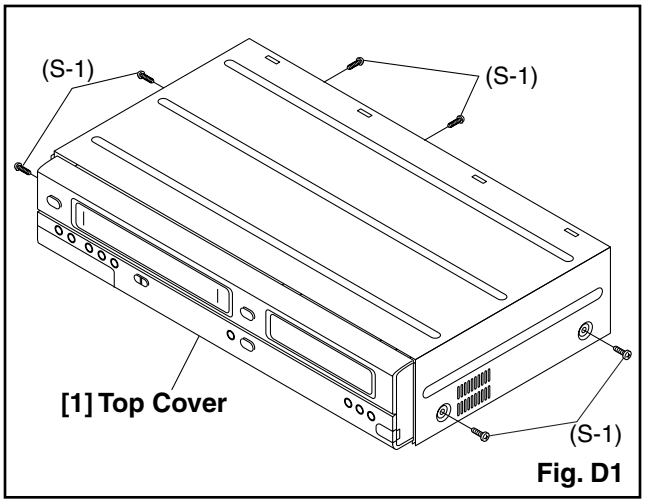


Fig. D1

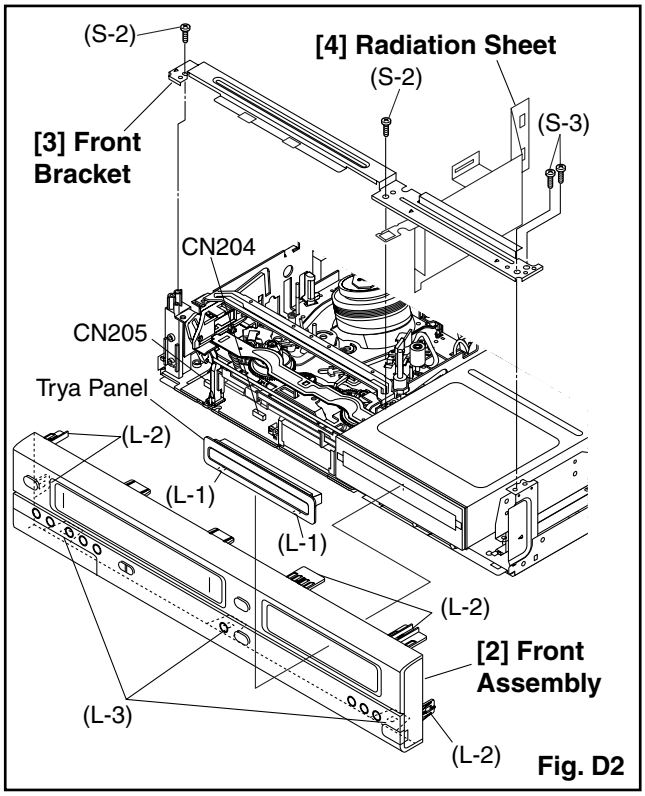


Fig. D2

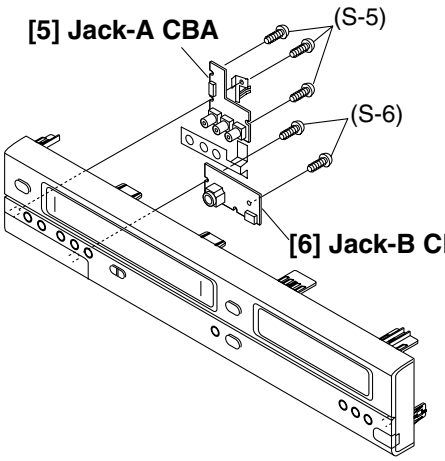


Fig. D3

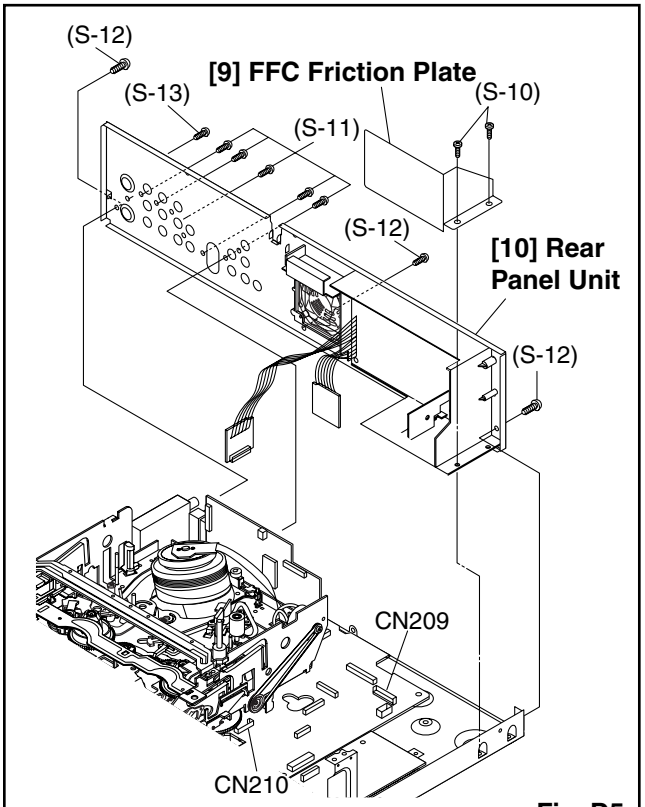


Fig. D5

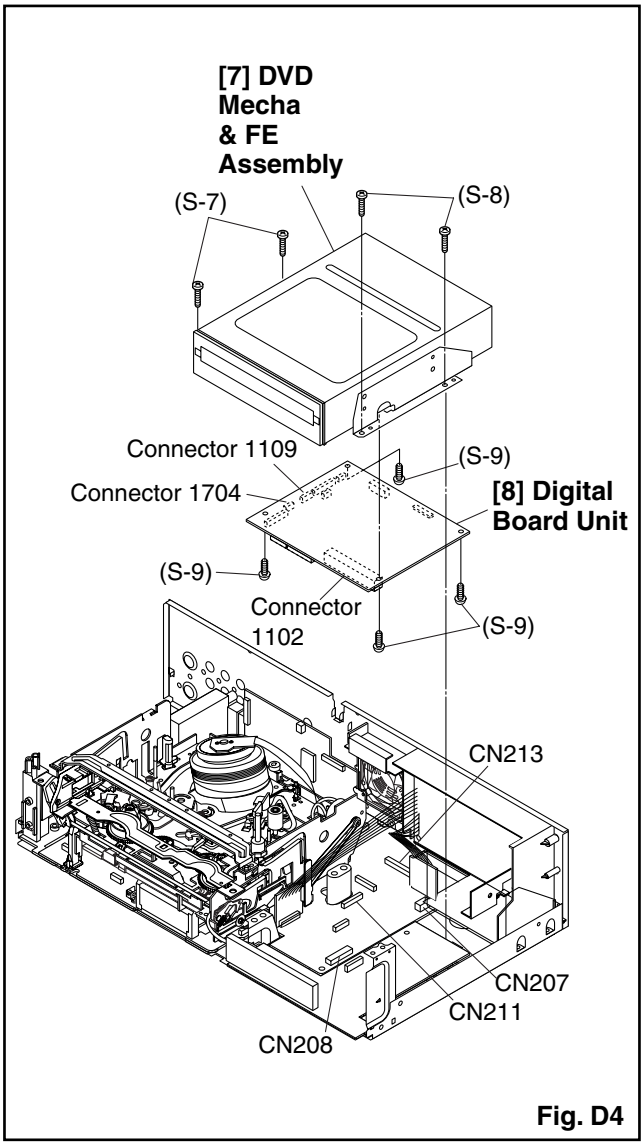


Fig. D4

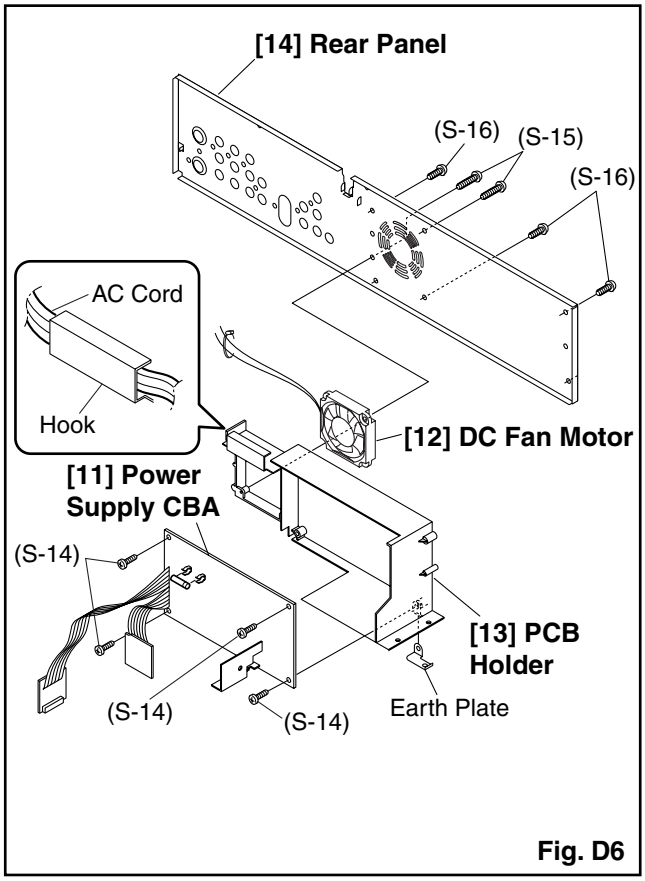


Fig. D6

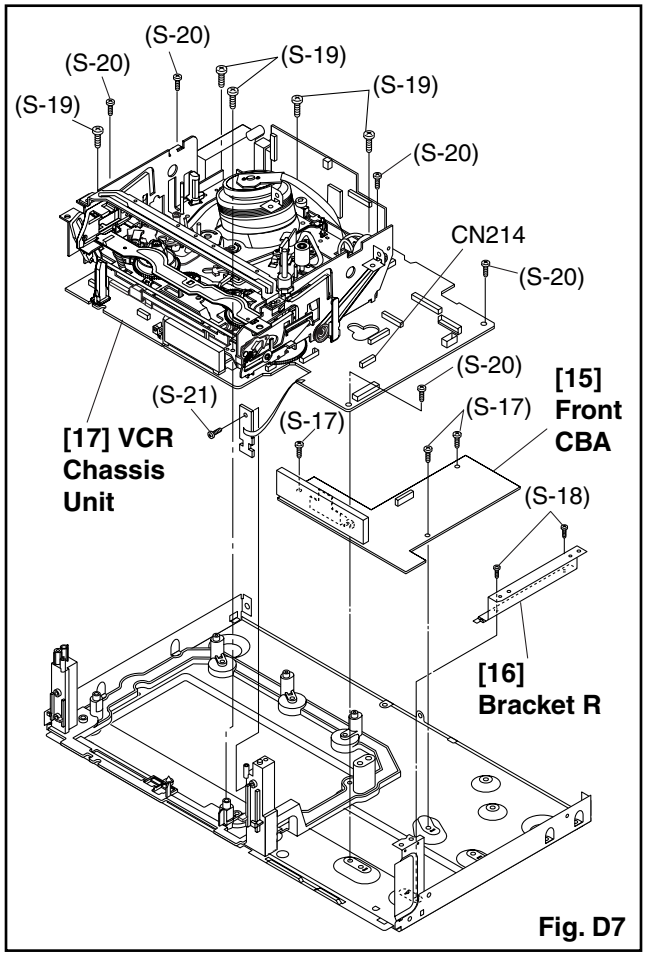
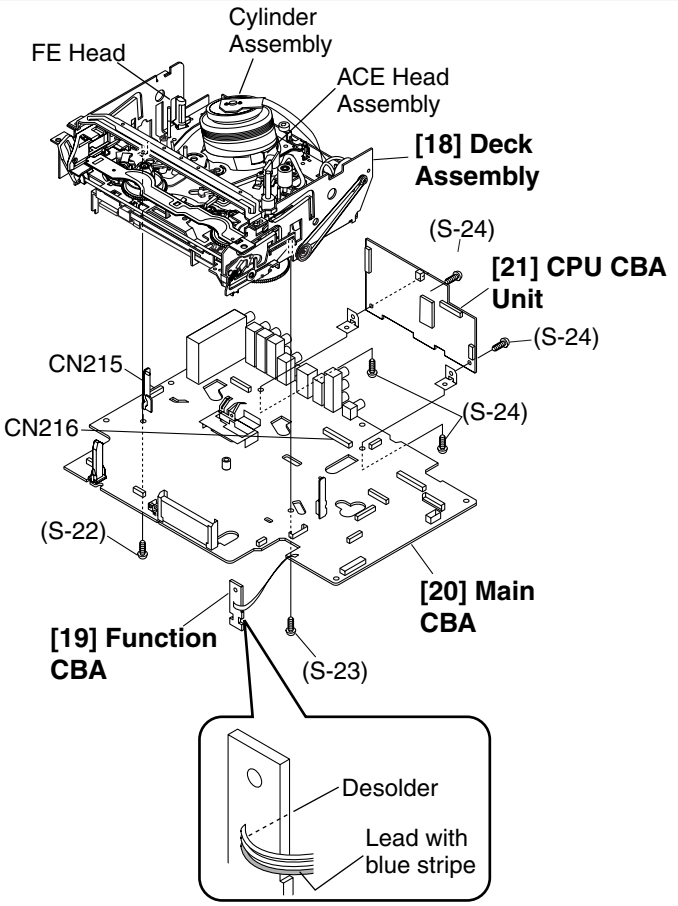
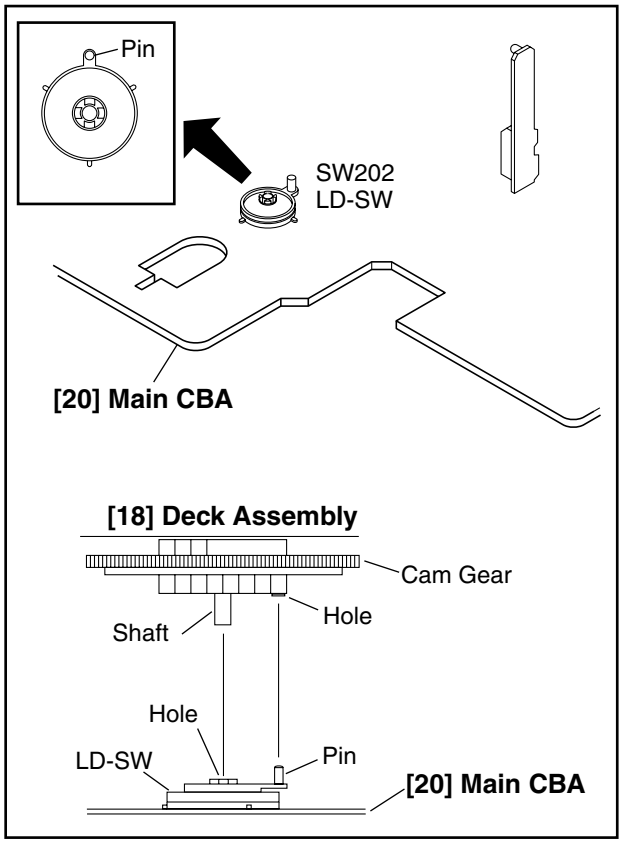
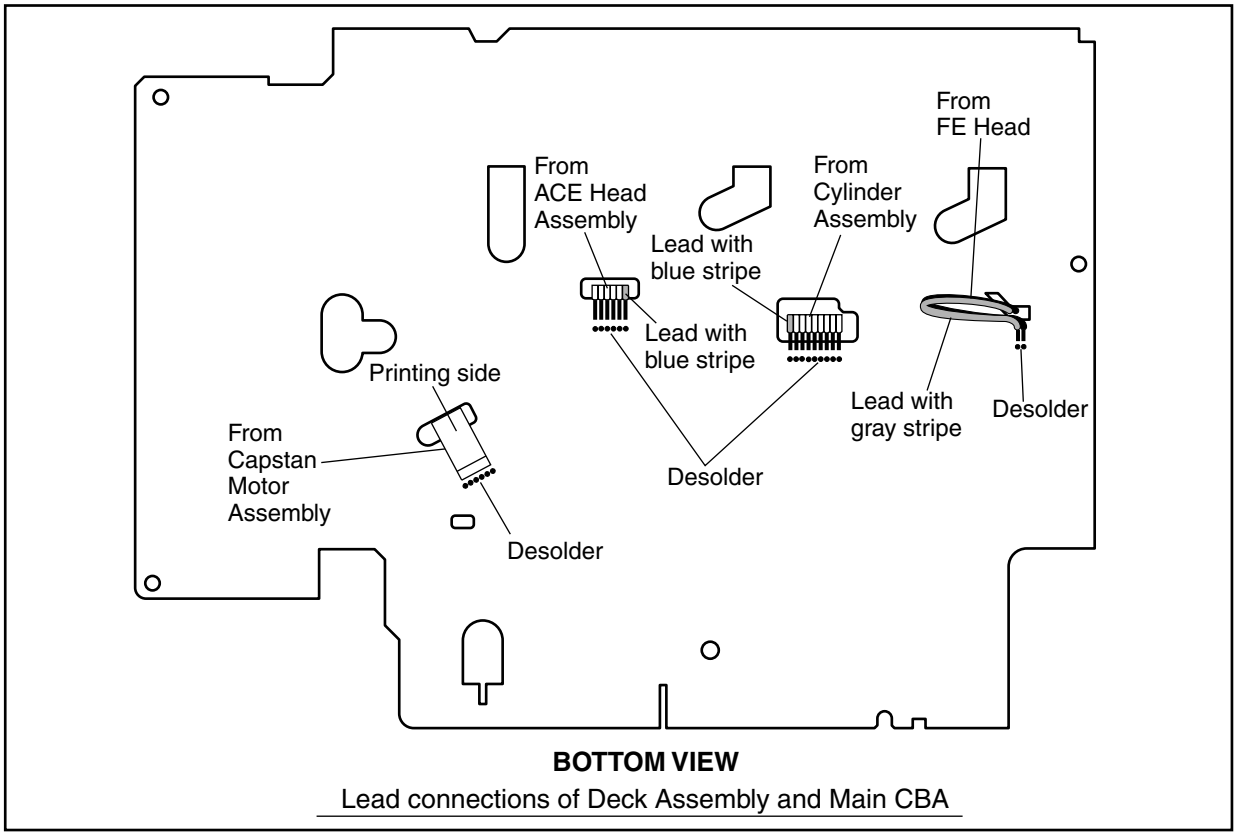

(S-20)
(S-20)
(S-19)
(S-19)
(S-19)
(S-20)
CN214
(S-20)
(S-20)
(S-21)
(S-17)
(S-17)
[15]
Front
CBA
[17] VCR
Chassis
Unit
(S-18)
[16]
Bracket R

Fig. D7







BOTTOM VIEW

Lead connections of Deck Assembly and Main CBA

Fig. D8

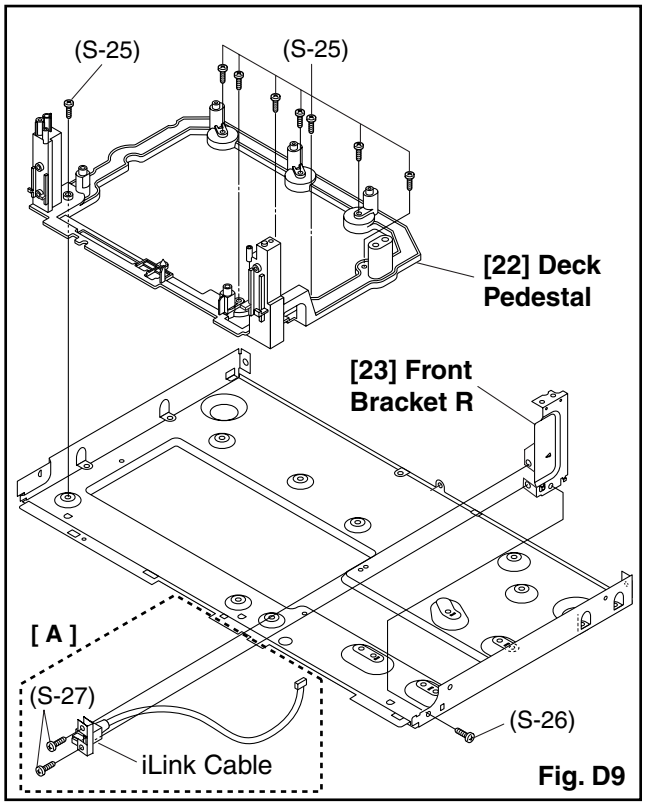
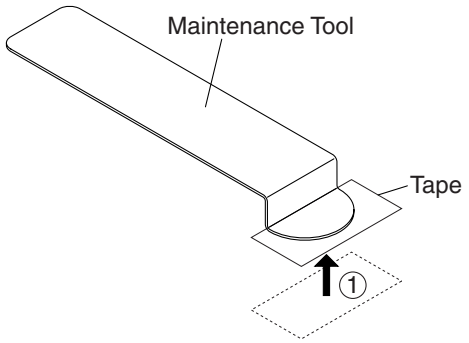
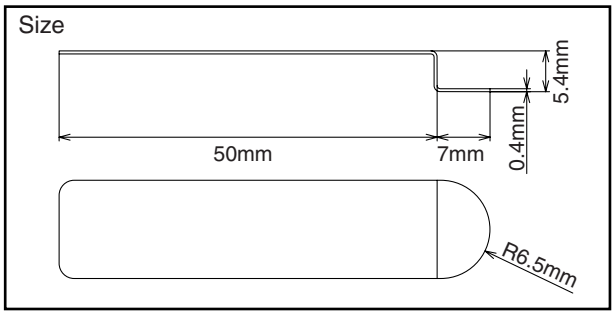

(S-25)
(S-25)
[22] Deck
Pedestal
[23] Front
Bracket R
[A]
(S-27)
iLink Cable
(S-26)

Fig. D9

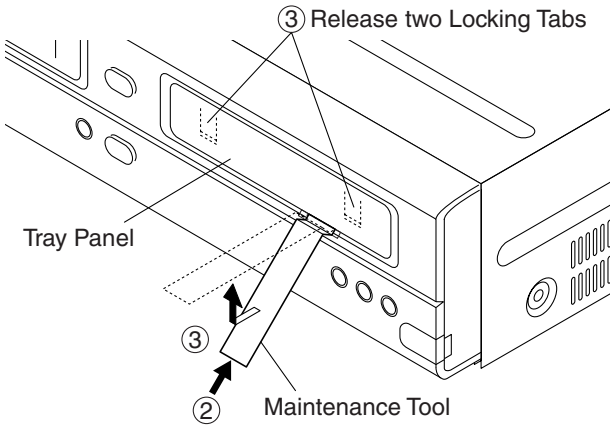
HOW TO EJECT MANUALLY

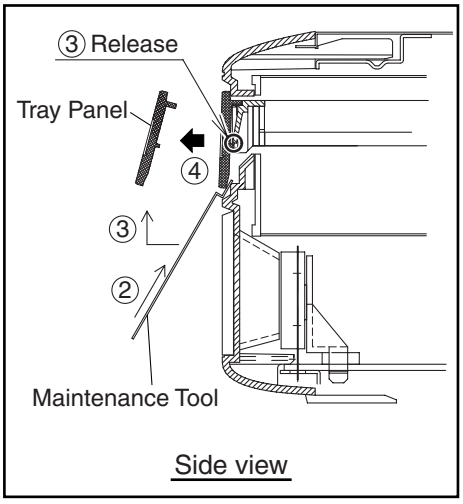
1. Put tape on the Maintenance Tool. (Please use a metallic plate as shown below as a maintenance tool.)



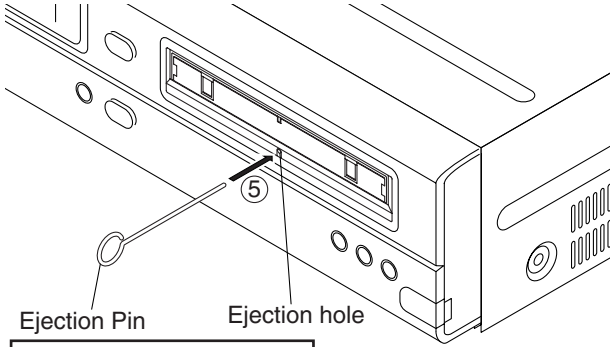


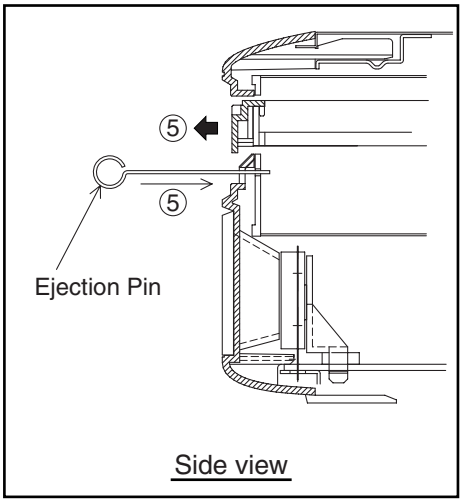
2. Insert the Maintenance Tool under the Tray Panel as shown.
3. Pull out and raise the Maintenance Tool up as shown to release two locking tabs of the Tray Panel.
4. Remove the Tray Panel.





5. Insert the Ejection Pin straightly into the ejection hole to open the tray.
   (Recommended size of the Ejection Pin: diameter; 1.2 mm, length; more than 50mm)





HOW TO INITIALIZE THE DVD RECORDER

To put the program back at the factory-default, initialize the DVD recorder using the following procedure.

1. Press and hold the [DVD STOP ■] button on the DVD recorder.
2. Insert the AC plug to an AC outlet.
3. Release [DVD STOP ■] button after 5 or 6 seconds.

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly."

NOTE:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either "CHANNEL ▼" or "CHANNEL ▲" button on the front panel first, then the "PLAY" button on the front panel.

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div.,
   F-Range: DC~AC-20MHz
2. Alignment Tape (VFMS0001H6)

Head Switching Position Adjustment

Purpose:

To determine the Head Switching position during playback.

Symptom of Misadjustment:

May cause Head Switching noise or vertical jitter in the picture.

Test point	Adj.Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) GND	VR201 (Switching Point) (MAIN CBA)	PLAY (SP)	-----
Tape	**Measurement Equipment**	**Spec.**	
VFMS0001H6	Oscilloscope	6.5H±1H (412.7µs±63.5µs)	

Connections of Measurement Equipment

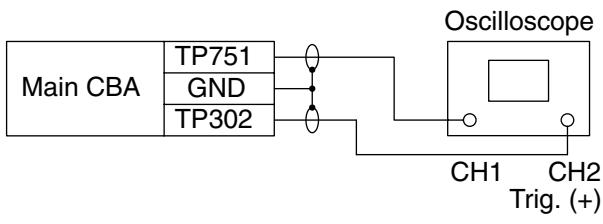
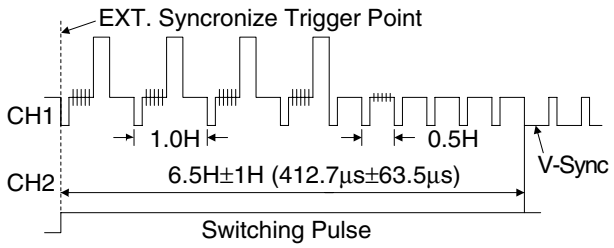


Figure 1

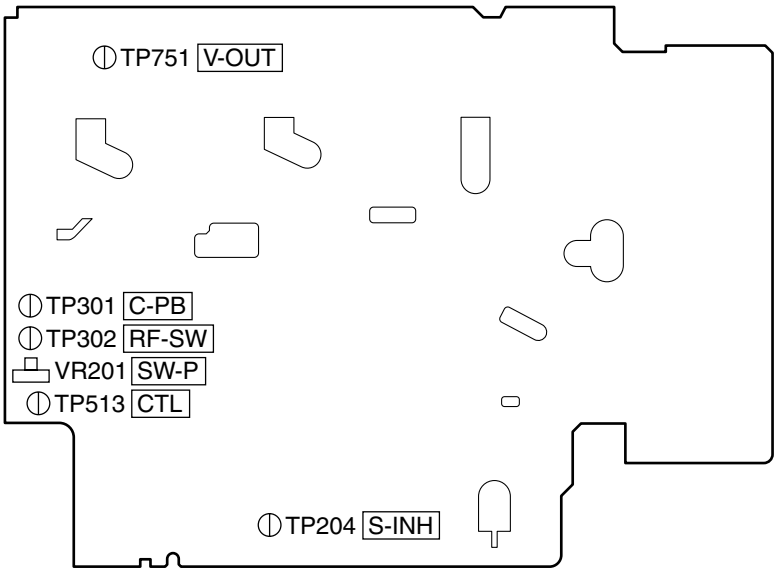


Reference Notes:

Playback the Alignment tape and adjust VR201 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H±1H (412.7µs±63.5µs) delayed position from the rising edge of the CH2 head switching pulse waveform.

Adjustment Points and Test Points

Main CBA Top View

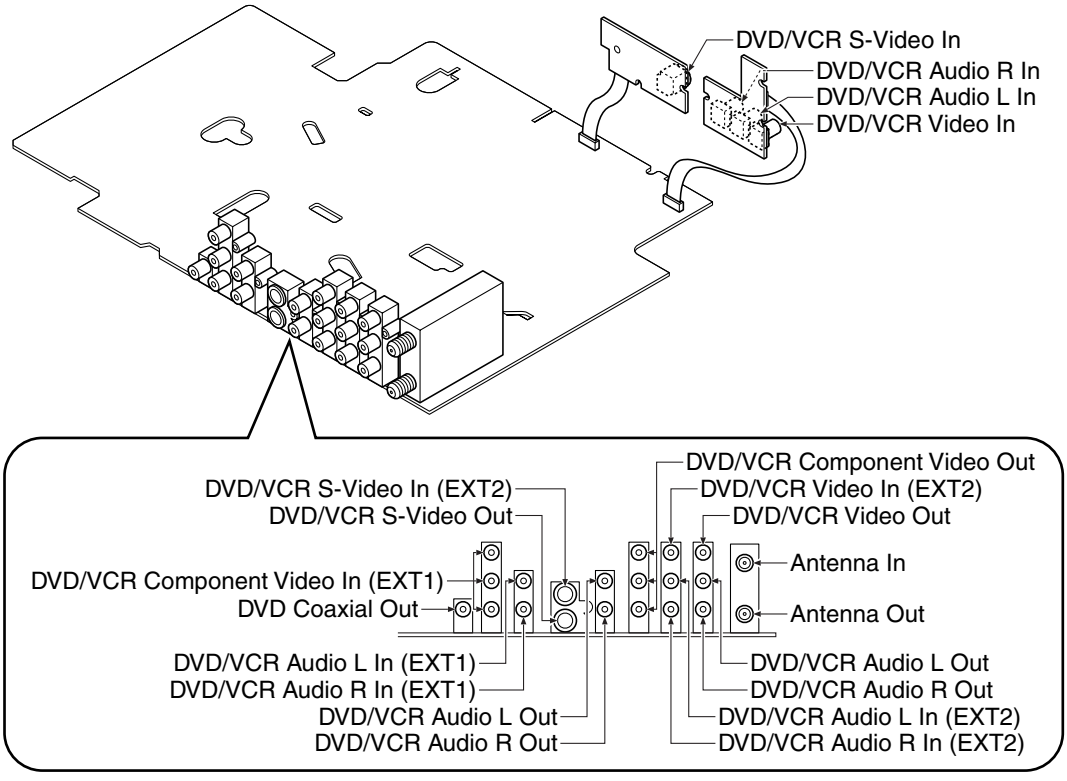


TEST POINT INFORMATION

: Indicates a test point with a jumper wire across a hole in the PCB.

TEST POINTS NOT USED IN ELECTRICAL ADJUSTMENTS

Test Point	Used in:	Page No.
TP301	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP302	Mechanical Alignment Procedures	2-3-3, 2-3-4
TP513	Mechanical Alignment Procedures	2-3-3
TP204	Preparation for Servicing	1-5-1



FIRMWARE RENEWAL MODE

1. Make a copy of the data for update to a CD-R or CD-RW.
2. Set the disc made in Step 1 on the tray and close.
3. Turn on the DVD recorder while pushing [DVD OPEN/CLOSE ⏏] button and [DVD RECORD ●] button at the same time. Update of F/W will begin after “FORCED DOWN” is displayed on DVD FLD.
4. Update of F/W will be performed automatically and the DVD recorder will be in the standby mode. Then press [DVD OPEN/CLOSE ⏏] button on the DVD recorder and remove the disc.

REWORK PROCEDURE IEEE UNIQUE NUMBER

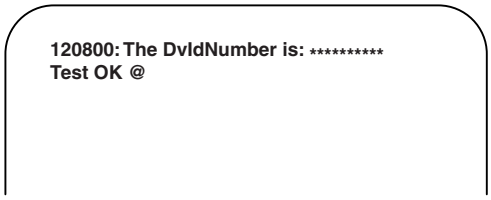
The procedure describes how to upgrade sets with a unique number after repair. This unique number is stored in the NVRAM of the FEBE board at the end of the production line.
This procedure is only valid or necessary when:

- The FEBE board is replaced
- NVRAM on the FEBE board is replaced
- NVRAM is cleared

In all other cases the repaired set retains its unique number.
The procedure defines several means to re-assure the unique number depending on the possibilities of repair or the state the faulty set is in.

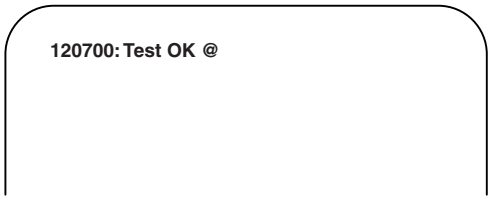
1. Connect defective digital board to PC via serial cable.
2. Start up hyper terminal or any other serial terminal via the correct settings (DSW command mode interface).
3. Read out existing unique number via 1208.

4. Press [ENTER] button on the remote control unit.



5. Note read out.
6. Program new digital board via nucleus 1207.

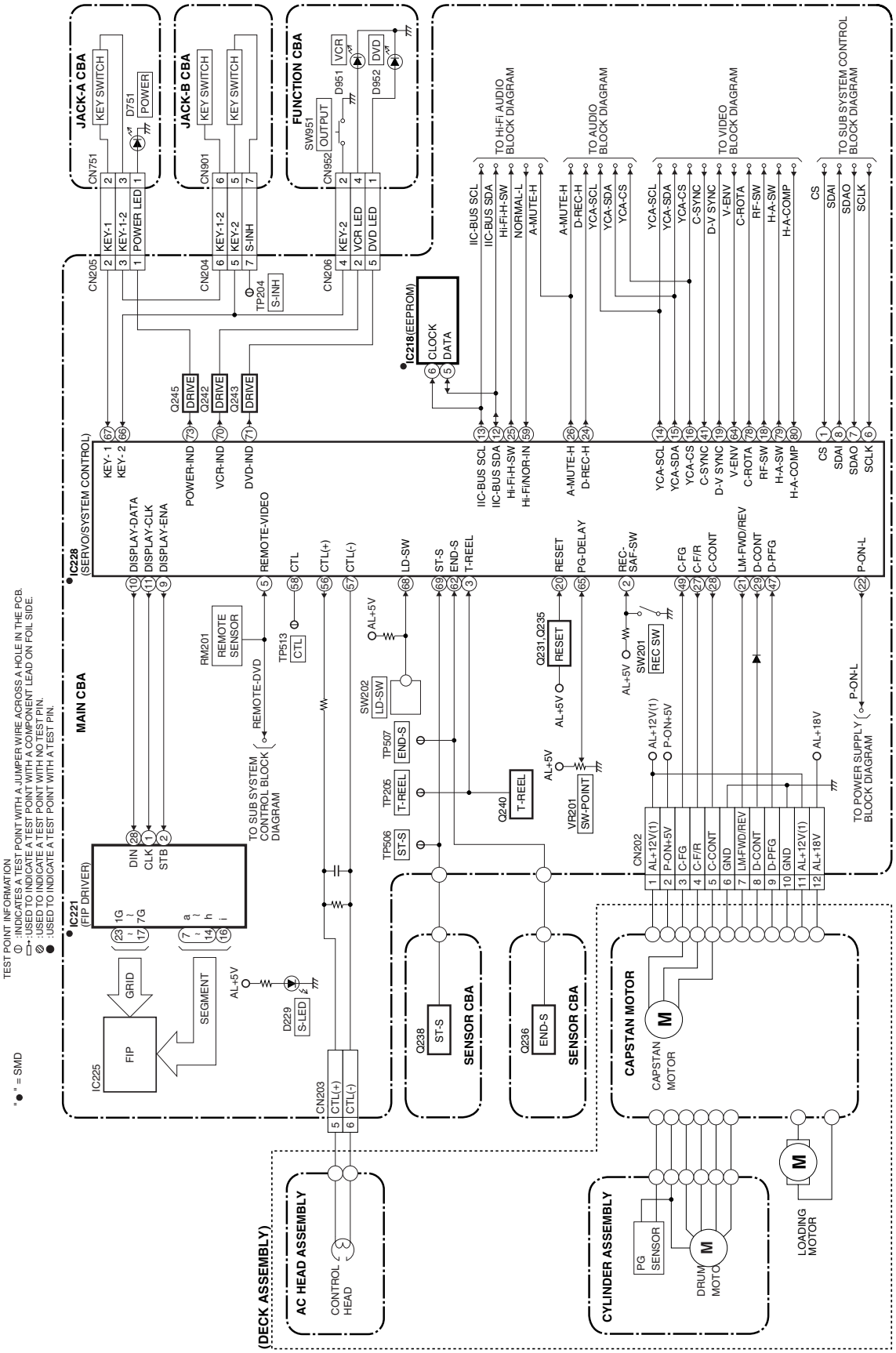
7. Press [ENTER] button on the remote control unit.



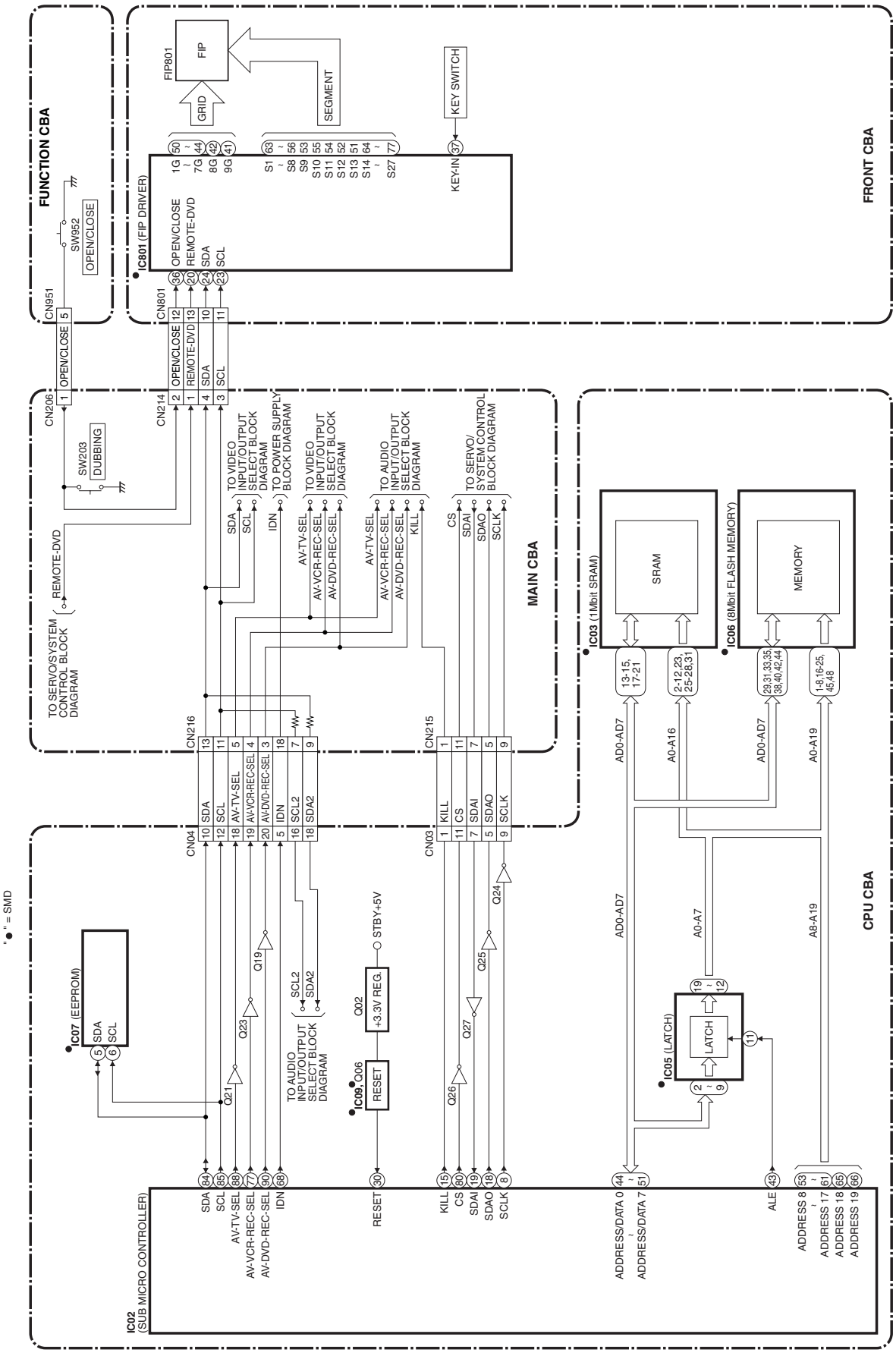
8. The set has now the original unique number.

BLOCK DIAGRAMS

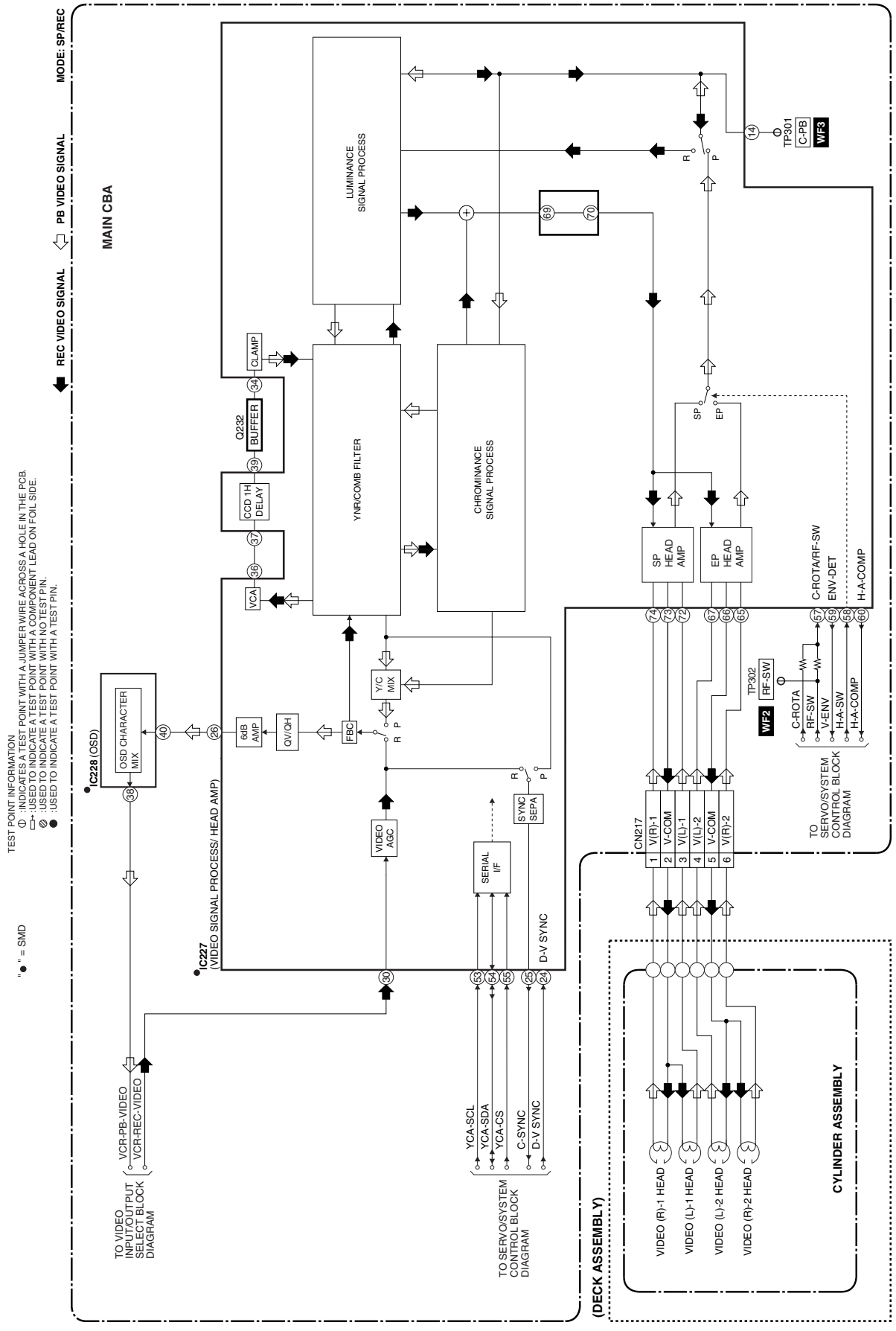
Servo / System Control Block Diagram



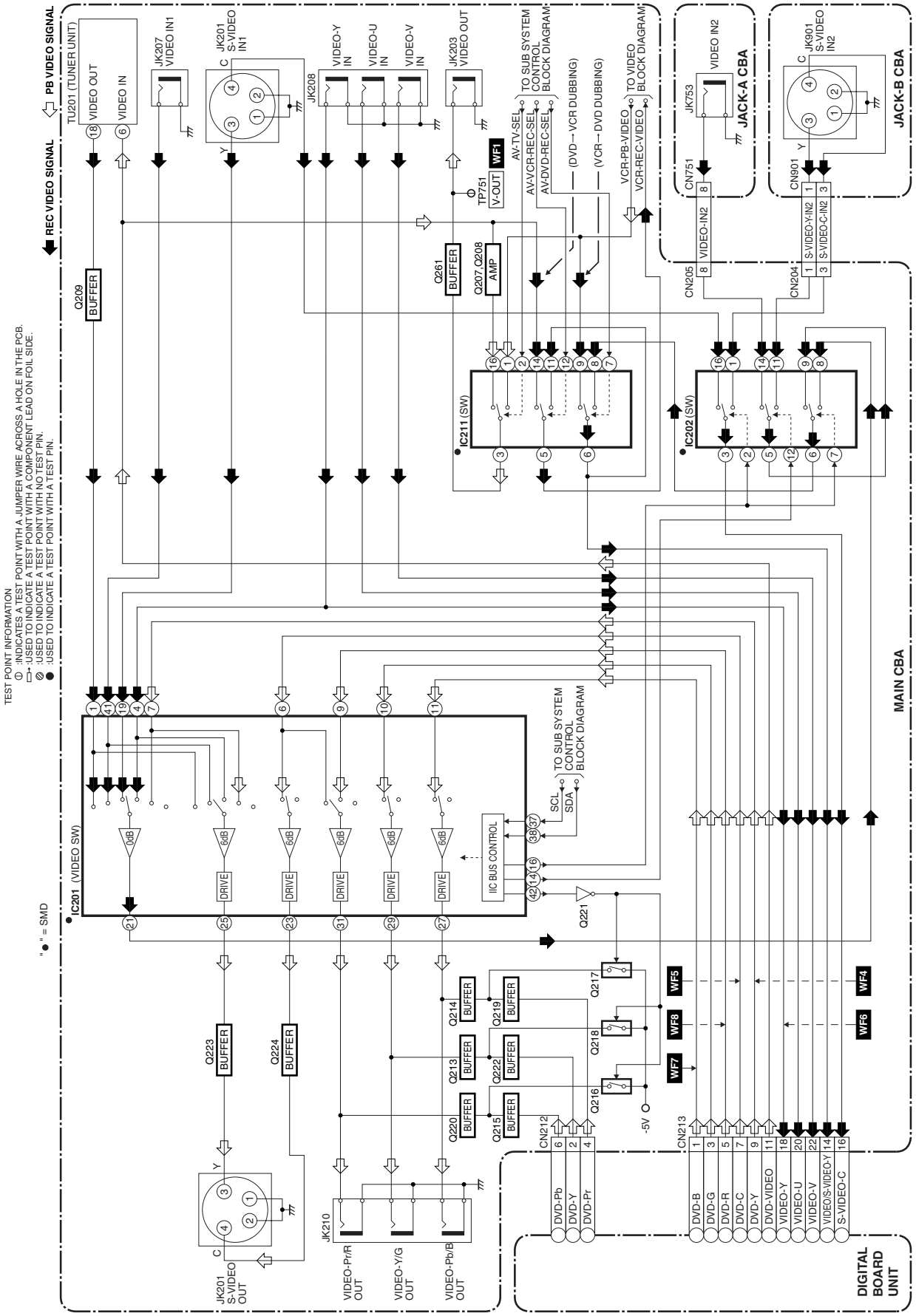
Sub System Control Block Diagram



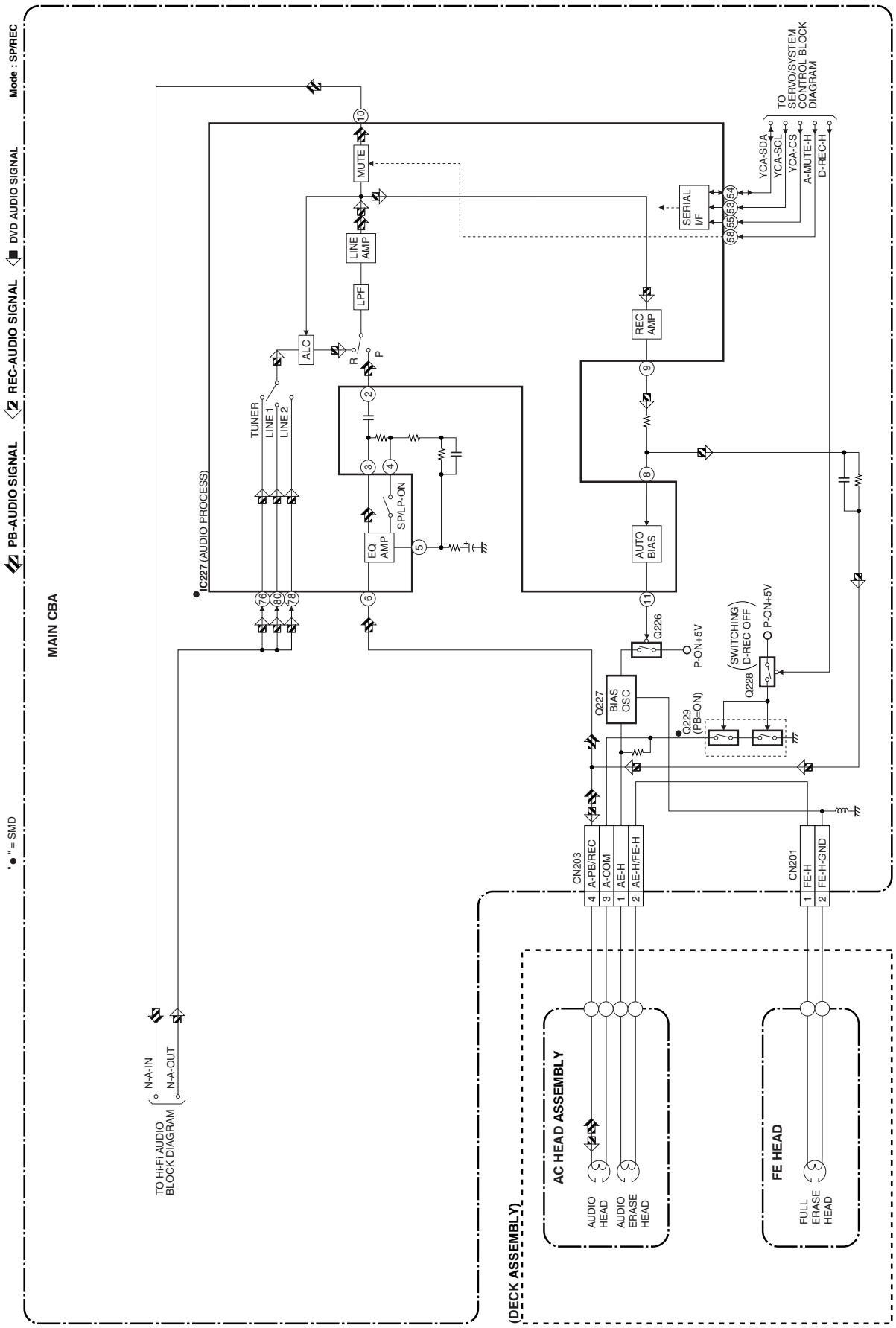
Video Block Diagram



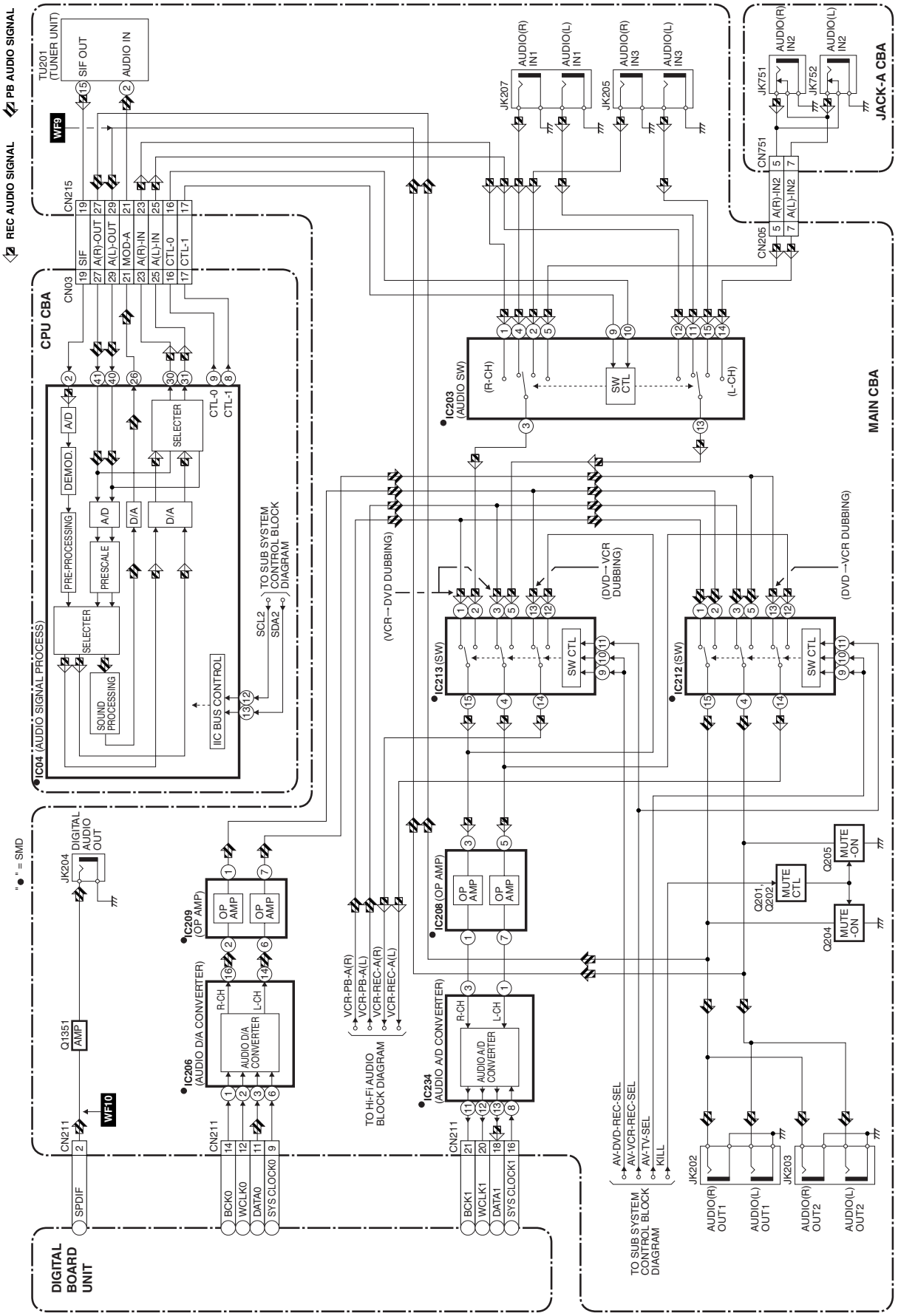
Video Input/Output Select Block Diagram



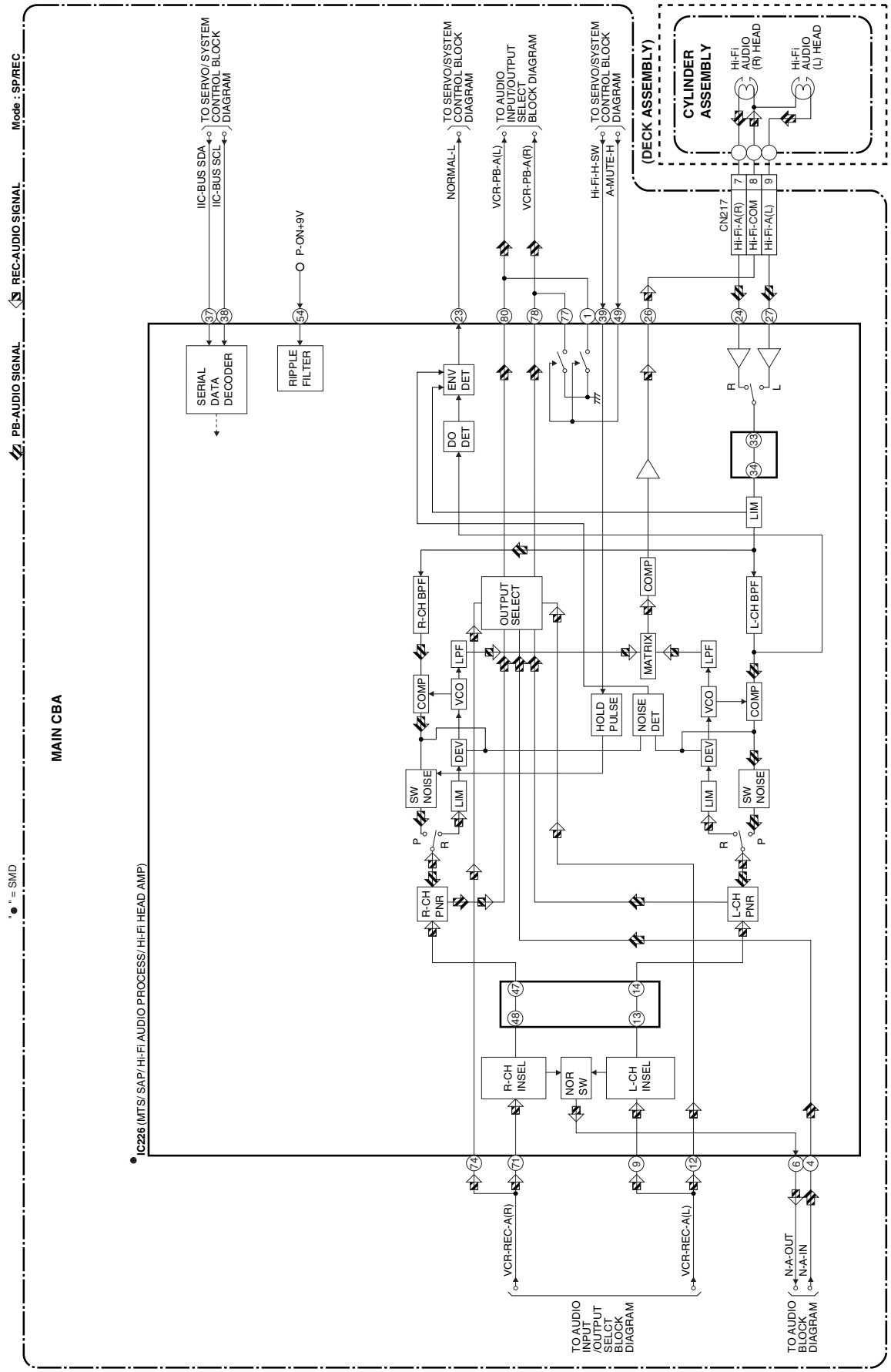
Audio Block Diagram



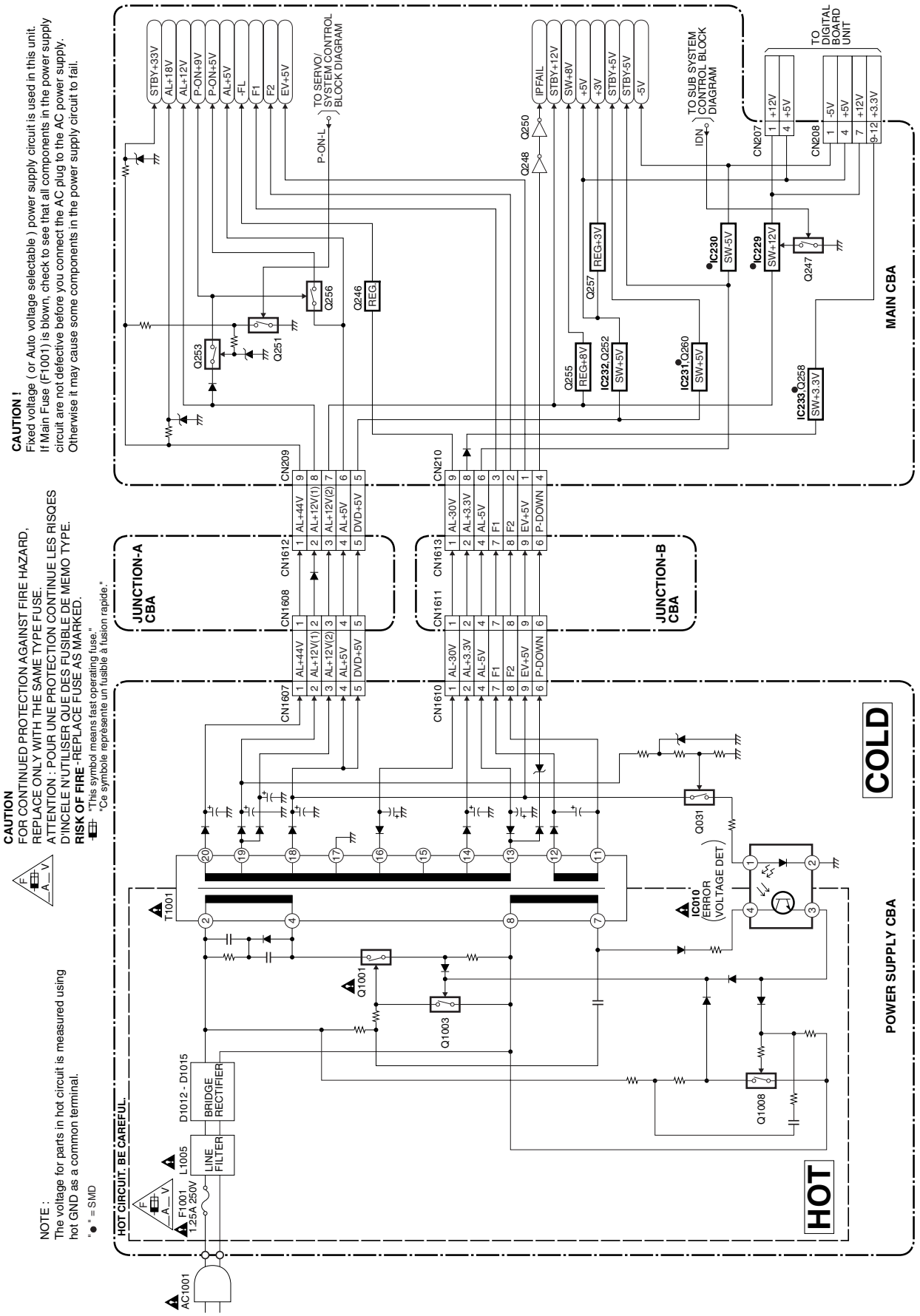
Audio Input/Output Select Block Diagram



Hi-Fi Audio Block Diagram



Power Supply Block Diagram



SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

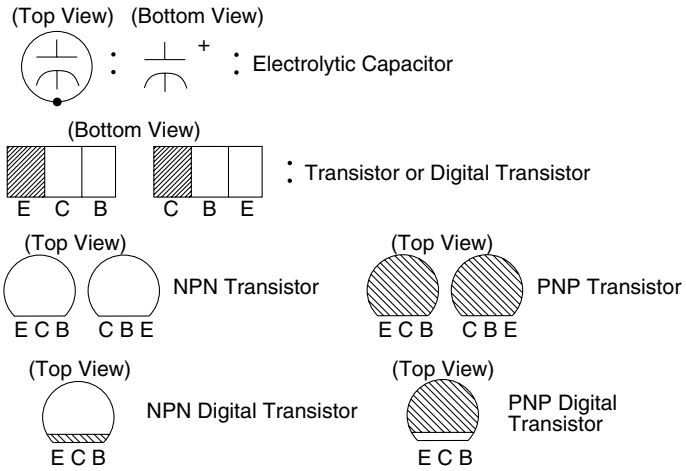
Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.
Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire or other hazards.
Under no circumstances should the original design be modified or altered without written permission from Philips Consumer Electronics Company. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.
* Broken Line : ▬ ▬ ▬ ▬ ▬

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 - 80%	20°C	–25~+85°C
(SR)	±15%	20°C	–25~+85°C
(Z)	±22.5%	20°C	–25~+85°C

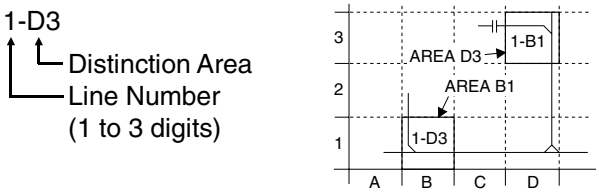
Capacitors and transistors are represented by the following symbols.

< PCB Symbols >



Notes:

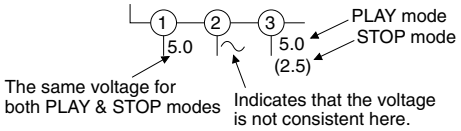
1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.
3. How to read converged lines.



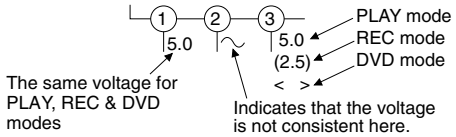
Examples:
(1). "1-D3" means that line number "1" goes to area "D3."
(2). "1-B1" means that line number "1" goes to area "B1."

4. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
5. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
6. All capacitance values are indicated in μF ($P=10^{-6}$ μF).
7. All voltages are DC voltages unless otherwise specified.
8. Voltage indications PLAY and REC modes on the schematics are as shown below.

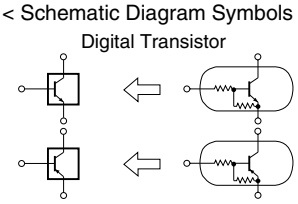
< DVD Section > Unit: Volts



< VCR Section >



< Schematic Diagram Symbols >



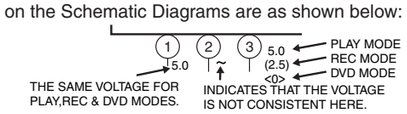
Main 1/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position
CAPACITORS	
C494	A-1
C498	D-1
C500	D-1
C501	D-1
C502	D-3
C504	D-3
C506	E-3
C508	E-3
C510	D-4
C512	D-4
C513	E-3
C515	E-3
C516	F-4
C518	F-4
C520	E-4
C523	D-4
C524	D-4
C525	C-4
C527	C-4
C529	C-4
C530	C-4
C531	C-4
C533	C-4
C535	B-4
C543	E-4
C612	C-1
DIODES	
D226	E-4
D229	A-1
ICS	
IC218	B-1
IC228	C-3
COILS	
L222	A-1
L224	E-3
L226	E-3
TRANSISTORS	
Q231	D-1
Q235	D-1
Q240	A-2
RESISTORS	
JC103	B-2

Ref No.	Position
RESISTORS	
R499	B-1
R500	D-1
R502	D-1
R505	D-1
R512	D-3
R513	D-4
R514	E-4
R517	E-4
R518	E-4
R521	C-4
R522	D-4
R523	C-4
R524	B-3
R525	B-4
R526	B-3
R527	B-3
R528	F-3
R535	A-2
R540	A-1
R541	B-2
R542	B-4
R543	B-1
R544	C-1
R561	C-1
R565	C-4
R567	C-1
R569	C-1
R571	C-1
R572	E-2
R582	B-4
R675	D-4
SWITCH	
SW201	A-2
VARIABLE RESISTOR	
VR201	B-4
CRYSTAL OSCILLATORS	
X201	D-3
TEST POINTS	
TP205	B-2
TP513	B-4

Main 1/7 Schematic Diagram < VCR Section >

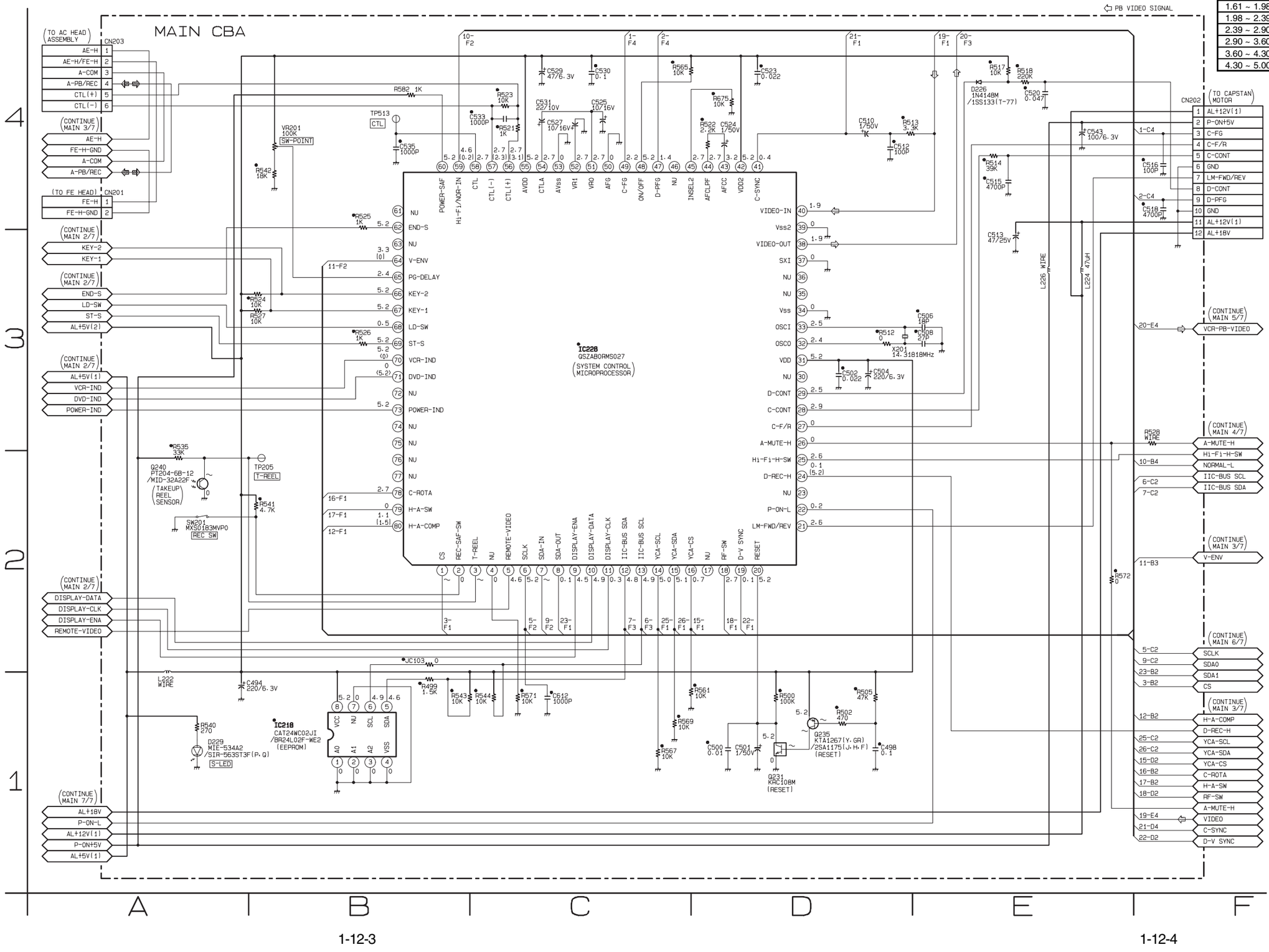
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



"●" = SMD

IC501 KEY VOLTAGE CHART

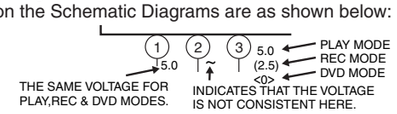
Voltage \ Pin No.	KEY 1 (67 PIN)	KEY 2 (66 PIN)
0.00 ~ 0.51V	STANDBY	OUTPUT
0.51 ~ 0.92V	STOP/EJECT	CH UP
0.92 ~ 1.27V	PLAY	CH DOWN/S-INH
1.27 ~ 1.61V	REW	----------
1.61 ~ 1.98V	FF	----------
1.98 ~ 2.39V	REC	----------
2.39 ~ 2.90V	----------	----------
2.90 ~ 3.60V	----------	----------
3.60 ~ 4.30V	----------	----------
4.30 ~ 5.00V	KEY OFF	KEY OFF



Main 2/7, Sensor, Function & Jack-B Schematic Diagram < VCR Section >

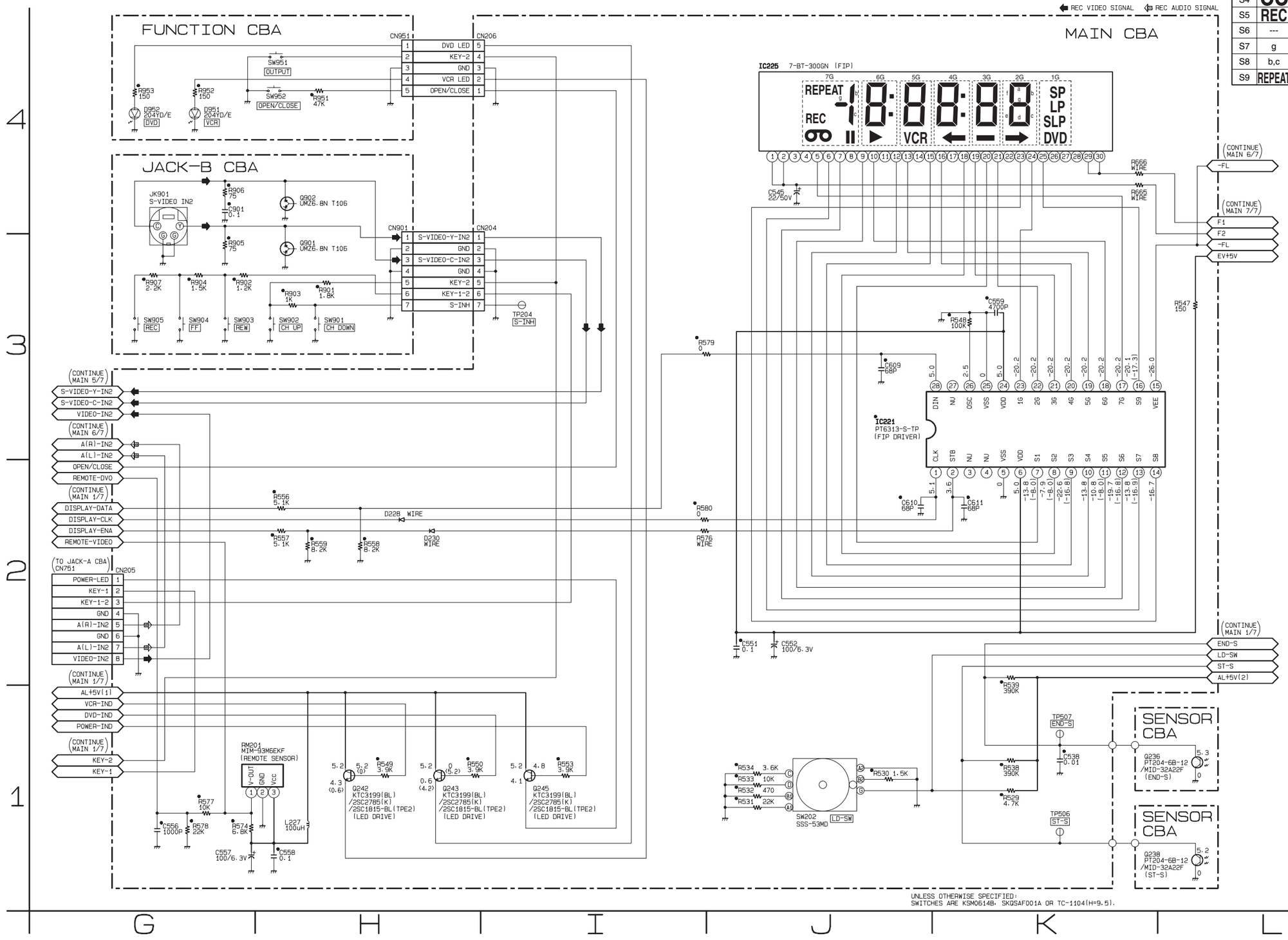
"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



IC225 MATRIX CHART

	7G	6G	5G	4G	3G	2G	1G
S1	---	a	a	a	a	a	---
S2	▮	b	b	b	b	b	SP
S3	---	f	f	f	f	f	LP
S4	∞	g	g	g	g	g	---
S5	REC	c	c	c	c	c	SLP
S6	---	e	e	e	e	e	---
S7	g	d	d	d	d	d	---
S8	b,c	⋮	---	⋮	---	---	---
S9	REPEAT	▶	VCR	←	▬	→	DVD



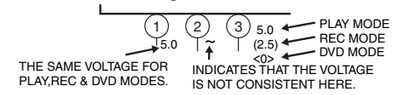
MAIN 2/7 Schematic Diagram Parts Location Guide

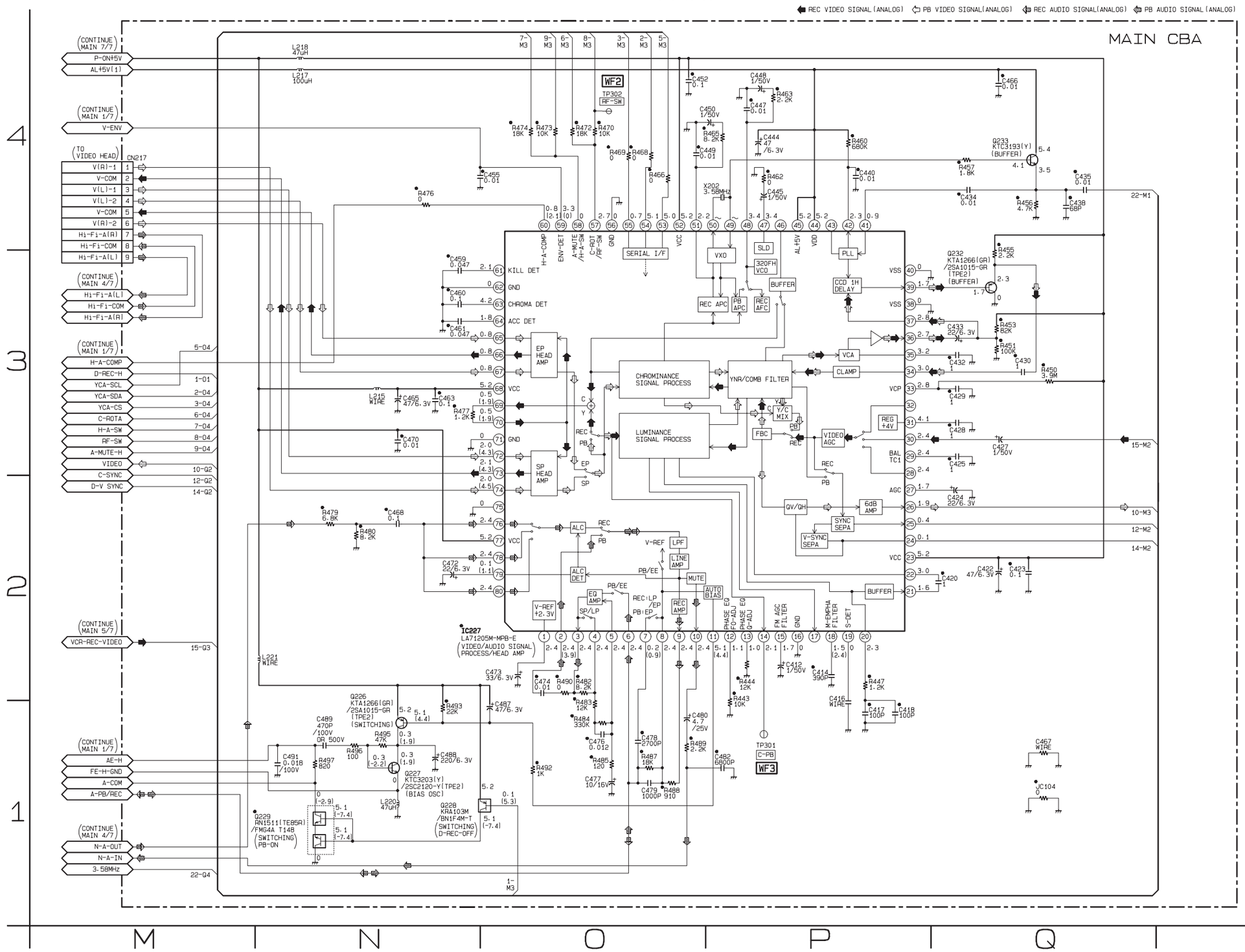
Ref No.	Position
CAPACITORS	
C538	K-1
C545	J-4
C551	J-2
C552	J-2
C556	G-1
C557	G-1
C558	H-1
C559	K-3
C609	J-3
C610	J-2
C611	K-2
CONNECTORS	
CN204	I-4
CN205	G-2
DIODES	
D228	H-2
D230	H-2
ICS	
IC221	J-3
IC225	J-4
COILS	
L227	H-1
TRANSISTORS	
Q242	H-1
Q243	H-1
Q245	I-1
RESISTORS	
R529	K-1
R530	J-1
R531	J-1
R532	J-1
R533	J-1
R534	J-1
R538	K-1
R539	K-2
R547	L-3
R548	K-3
R549	H-1
R550	H-1
R553	I-1
R556	H-2
R557	H-2
R558	H-2
R559	H-2
SWITCHES	
SW202	J-1
MISCELLANEOUS	
RM201	H-1
TEST POINTS	
TP204	I-3
TP506	K-1
TP507	K-1

Main 3/7 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





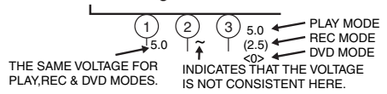
MAIN 3/7 Schematic Diagram Parts Location Guide

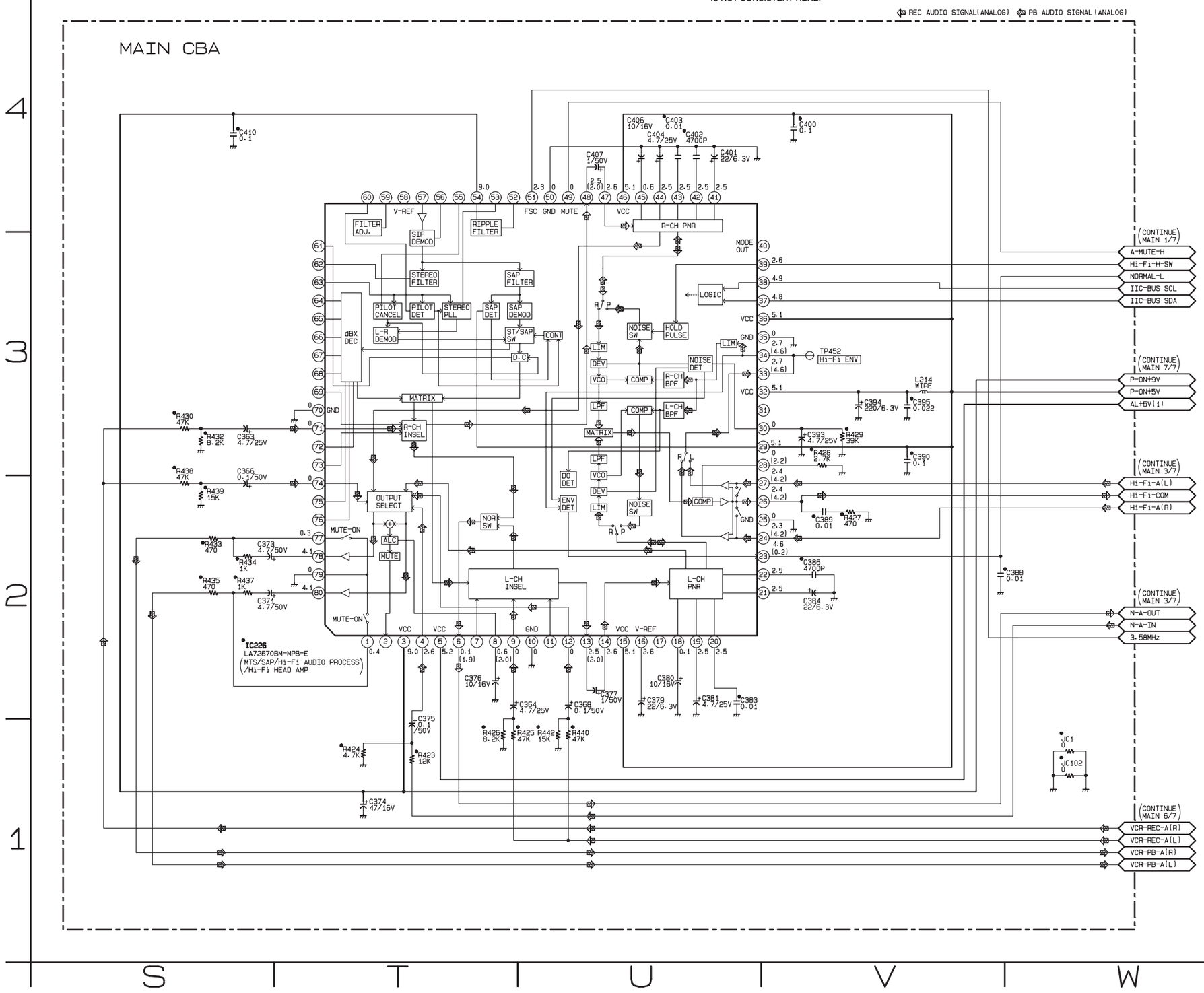
Ref No.	Position	Ref No.	Position
CAPACITORS		COILS	
C412	P-2	L220	N-1
C414	P-2	L221	N-2
C416	P-1	TRANSISTORS	
C417	P-1	Q226	N-1
C418	P-1	Q227	N-1
C420	Q-2	Q228	N-1
C422	Q-2	Q229	N-1
C423	Q-2	Q232	Q-3
C424	Q-2	Q233	Q-4
C425	Q-3	RESISTORS	
C427	Q-3	JC104	Q-1
C428	Q-3	R443	P-1
C429	Q-3	R444	P-2
C430	Q-3	R447	P-2
C432	Q-3	R450	Q-3
C433	Q-3	R451	Q-3
C434	Q-4	R453	Q-3
C435	Q-4	R455	Q-3
C438	Q-4	R456	Q-4
C440	P-4	R457	Q-4
C444	P-4	R460	P-4
C445	P-4	R462	P-4
C447	P-4	R463	P-4
C448	P-4	R465	P-4
C449	O-4	R466	O-4
C450	P-4	R468	O-4
C452	O-4	R469	O-4
C455	O-4	R470	O-4
C459	N-3	R472	O-4
C460	N-3	R473	O-4
C461	N-3	R474	O-4
C463	N-3	R476	N-4
C465	N-3	R477	N-3
C466	Q-3	R479	N-2
C467	Q-1	R480	N-2
C468	N-2	R482	O-2
C470	N-3	R483	O-1
C472	N-2	R484	O-1
C473	O-2	R485	O-1
C474	O-2	R487	O-1
C476	O-1	R488	O-1
C477	O-1	R489	O-1
C478	O-1	R490	O-2
C479	O-1	R492	O-1
C480	O-1	R493	N-1
C482	P-1	R495	N-1
C487	O-1	R496	N-1
C488	N-1	R497	N-1
C489	N-1	R665	K-4
C491	N-1	R666	K-4
ICS		CRYSTAL OSCILLATOR	
IC227	O-2	X202	P-4
COILS		TEST POINT	
L215	N-3	TP301	P-1
L217	N-4	TP302	O-4
L218	N-4		

Main 4/7 Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

"●" = SMD





Main 4/7 Schematic Diagram Parts Location Guide < VCR Section >

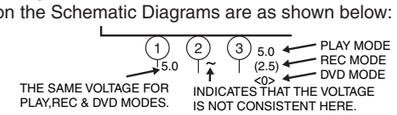
Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS	
C363	S-3	C407	U-4
C364	U-2	C410	S-4
C366	S-2	ICS	
C368	U-2	IC226	S-2
C371	S-2	COILS	
C373	S-2	L214	V-2
C374	T-1	RESISTORS	
C375	T-1	JC1	W-1
C376	T-2	JC102	W-1
C377	U-2	R423	T-1
C379	U-2	R424	T-1
C380	U-2	R425	U-1
C381	U-2	R426	T-1
C383	U-2	R427	V-2
C384	V-2	R428	V-2
C386	V-2	R429	V-2
C388	W-2	R430	S-3
C389	V-2	R432	S-3
C390	V-3	R433	S-2
C393	V-3	R434	S-2
C394	V-3	R435	S-2
C395	V-3	R437	S-2
C400	V-4	R438	S-2
C401	U-4	R439	S-2
C402	U-4	R440	U-1
C403	U-4	R442	U-1
C404	U-4	TEST POINT	
C406	U-4	TP452	V-3

Main 5/7 Schematic Diagram Parts Location Guide < VCR Section >

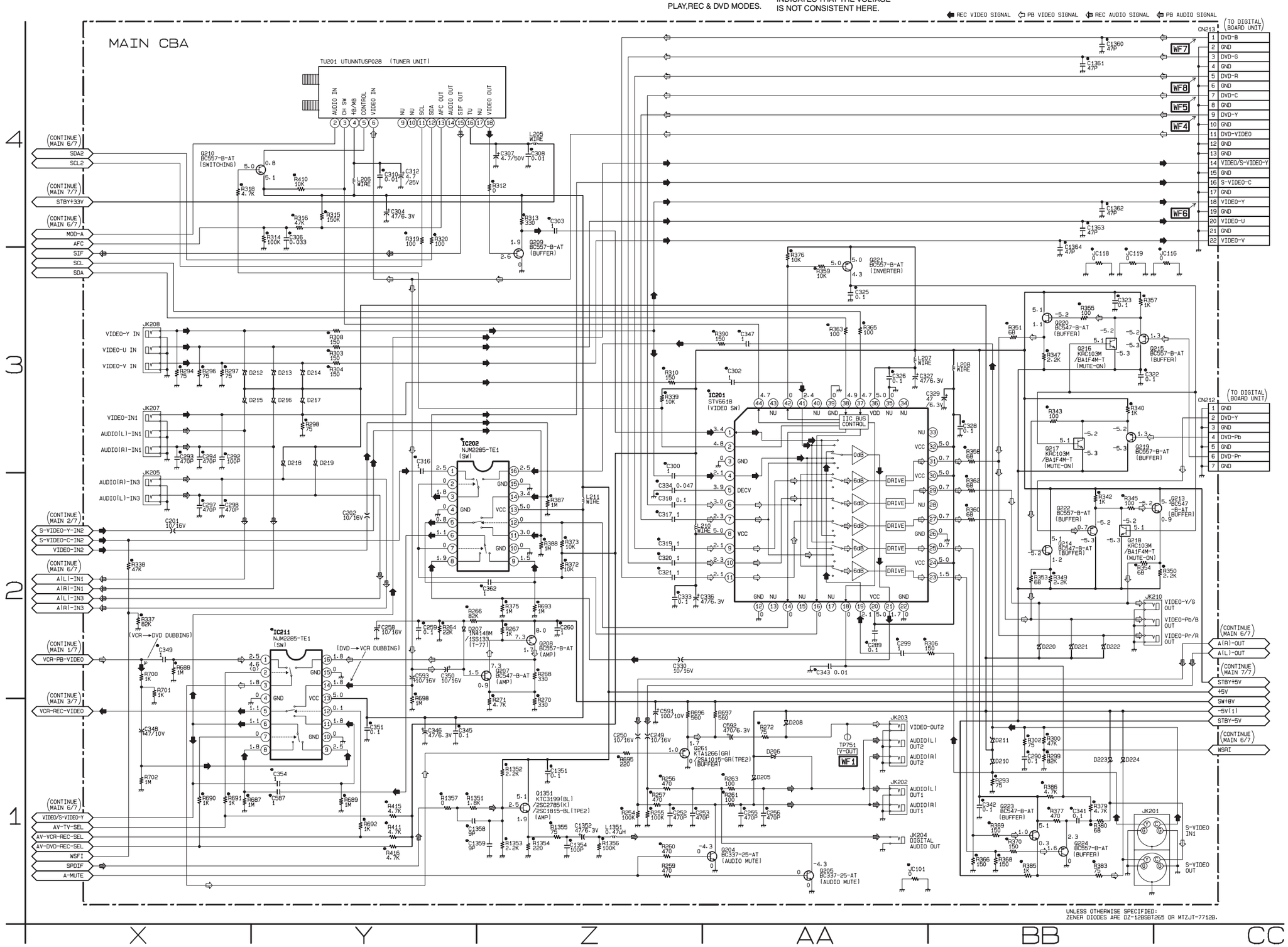
Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		COILS		RESISTORS		RESISTORS	
C201	X-2	C345	Y-1	L206	Y-4	R294	X-3	R376	AA-3
C202	Y-2	C346	Y-1	L207	AA-3	R296	X-3	R377	BB-1
C249	Z-1	C347	AA-3	L208	BB-3	R297	X-3	R379	BB-1
C250	Z-1	C348	X-1	L210	Z-2	R298	Y-3	R380	BB-1
C252	Z-1	C349	X-2	L211	Z-2	R299	BB-1	R383	BB-1
C253	Z-3	C350	Y-2	L1351	Z-1	R300	BB-1	R385	BB-1
C255	AA-1	C351	Y-1	TRANSISTORS		R302	BB-1	R386	BB-1
C256	AA-1	C354	Y-1	Q204	AA-1	R303	Y-3	R387	Z-2
C258	Y-2	C587	Y-1	Q205	AA-1	R304	Y-3	R388	Z-2
C259	Y-2	C591	Z-1	Q207	Z-2	R306	BB-2	R390	AA-3
C260	Z-2	C592	AA-1	Q208	Z-2	R308	Y-3	R410	Y-4
C289	AA-2	C593	Y-2	Q209	Z-3	R310	Z-3	R411	Y-1
C290	BB-1	C1351	Z-1	Q210	Y-4	R312	Z-4	R415	Y-1
C292	X-3	C1352	Z-1	Q213	CC-2	R313	Z-4	R416	Y-1
C293	X-3	C1354	Z-1	Q214	BB-2	R314	Y-4	R687	X-1
C294	X-3	C1358	Y-1	Q215	BB-3	R315	Y-4	R688	X-2
C297	X-2	C1359	Z-1	Q216	BB-3	R316	Y-4	R689	Y-1
C298	X-2	C1360	BB-4	Q217	BB-3	R318	X-4	R690	X-1
C299	AA-2	C1361	BB-4	Q218	BB-2	R319	Y-4	R691	X-1
C300	Z-2	C1362	BB-4	Q219	BB-3	R320	Y-4	R692	Y-1
C302	AA-3	C1363	BB-4	Q220	BB-3	R337	X-2	R693	Z-2
C303	Z-4	C1364	BB-4	Q221	AA-3	R338	X-2	R695	Z-1
C304	Y-4	DIODES		Q222	BB-2	R339	Z-3	R696	Z-1
C306	Y-4	D205	AA-1	Q223	BB-1	R340	BB-3	R697	AA-1
C307	Z-4	D206	AA-1	Q224	BB-1	R342	BB-2	R698	Y-1
C308	Z-4	D207	Y-2	Q261	Z-1	R343	BB-3	R700	X-2
C310	Y-4	D208	AA-1	Q1351	Z-1	R345	BB-2	R701	X-2
C312	Y-4	D210	BB-1	RESISTORS		R347	BB-3	R702	X-1
C316	Y-3	D211	BB-1	JC101	AA-1	R349	BB-2	R1351	Y-1
C317	Z-2	D212	X-3	JC116	CC-3	R350	CC-2	R1352	Z-1
C318	Z-2	D213	Y-3	JC118	BB-3	R351	BB-3	R1353	Z-1
C319	Z-2	D214	Y-3	JC119	BB-3	R353	BB-2	R1354	Z-1
C320	Z-2	D215	X-3	R254	Z-1	R354	BB-2	R1355	Z-1
C321	Z-2	D216	Y-3	R255	Z-1	R355	BB-3	R1356	Z-1
C322	BB-3	D217	Y-3	R256	Z-1	R357	BB-3	R1357	Y-1
C323	BB-3	D218	Y-3	R257	Z-1	R358	BB-3	MISCELLANEOUS	
C325	AA-3	D219	Y-3	R259	Z-1	R359	AA-3	JK201	BB-1
C326	AA-3	D220	BB-2	R260	Z-1	R360	BB-2	JK202	AA-1
C327	AA-3	D221	BB-2	R261	AA-1	R362	BB-2	JK203	AA-1
C328	BB-3	D222	BB-2	R263	AA-1	R363	AA-3	JK204	AA-1
C329	BB-3	D223	BB-1	R264	Y-2	R365	AA-3	JK205	AA-2
C330	Z-2	D224	BB-1	R266	Y-2	R366	BB-1	JK207	AA-3
C333	Z-2	ICS		R267	Z-2	R368	BB-1	JK208	AA-3
C334	Z-2	IC201	AA-2	R268	Z-2	R369	BB-1	JK210	BB-2
C336	Z-2	IC202	Z-2	R270	Z-1	R370	BB-1	TU201	Y-4
C341	BB-1	IC211	Y-1	R271	Z-1	R372	Z-2	TEST POINT	
C342	BB-1	COILS		R272	AA-1	R373	Z-2	TP751	AA-1
C343	AA-2	L205	Z-4	R293	BB-1	R375	Z-2		

Main 5/7 Schematic Diagram < VCR Section >

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



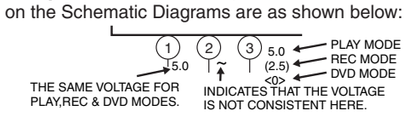
"●" = SMD



Main 6/7 Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:



Main 6/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		RESISTORS		RESISTORS	
C204	EE-4	C355	EE-1	J31	DD-2	R244	FF-1
C205	EE-4	C356	FF-3	JC05	HH-1	R246	FF-1
C206	EE-4	C357	FF-2	JC106	HH-1	R247	FF-1
C207	EE-4	C358	EE-1	JC107	HH-1	R248	FF-1
C208	FF-2	C359	FF-1	JC114	HH-1	R250	FF-2
C209	FF-2	C584	EE-2	JC121	HH-1	R252	FF-2
C211	FF-2	C586	EE-2	R201	FF-4	R280	GG-3
C212	FF-2	C596	EE-3	R202	FF-4	R282	GG-3
C214	FF-3	C597	DD-2	R203	FF-4	R284	GG-3
C215	FF-3	C598	DD-1	R204	FF-4	R286	HH-3
C216	FF-4	C599	DD-1	R205	FF-2	R287	HH-3
C217	FF-4	C600	DD-4	R206	FF-2	R288	II-4
C218	FF-4	C601	DD-4	R207	GG-3	R289	HH-4
C219	FF-4	C602	HH-4	R208	GG-3	R290	II-4
C220	FF-4	C603	HH-3	R209	GG-4	R292	II-4
C221	FF-4	J373	DD-3	R210	GG-4	R322	DD-4
C222	FF-3	J378	EE-1	R211	FF-2	R323	DD-4
C223	HH-2	CONNECTORS		R212	FF-4	R324	DD-4
C224	HH-2	CN211	II-4	R213	FF-4	R326	DD-4
C225	HH-2	CN212	CC-3	R214	FF-4	R327	DD-4
C226	HH-2	CN213	CC-4	R215	FF-4	R334	EE-4
C227	GG-2	CN214	DD-4	R216	EE-3	R335	EE-4
C230	HH-4	CN215	DD-1	R217	FF-3	R392	EE-2
C232	GG-1	CN216	II-1	R218	FF-3	R393	EE-1
C233	HH-2	DIODE		R219	FF-3	R394	EE-2
C235	GG-1	D225	GG-4	R220	FF-3	R395	EE-1
C236	GG-1	ICS		R221	FF-3	R397	FF-1
C238	GG-1	IC203	FF-4	R222	FF-3	R404	FF-2
C239	FF-1	IC206	GG-2	R224	GG-2	R405	EE-3
C240	FF-1	IC208	FF-2	R225	HH-3	R406	FF-2
C241	FF-1	IC209	FF-1	R227	HH-3	R413	EE-4
C242	GG-1	IC212	EE-2	R229	II-4	R414	EE-4
C243	GG-1	IC213	EE-2	R230	II-4	R419	FF-1
C244	FF-1	IC234	HH-3	R232	II-4	R667	DD-4
C247	FF-1	COILS		R234	II-4	R699	II-4
C248	FF-1	L228	II-2	R235	HH-4	SWITCHES	
C274	GG-3	TRANSISTORS		R236	GG-1	SW203	DD-4
C275	GG-3	Q201	FF-3	R238	GG-1		
C277	HH-3	Q202	FF-3	R239	HH-2		
C278	HH-3	Q203	GG-2	R241	GG-1		
C279	HH-3	Q206	GG-3	R242	FF-1		

Main 7/7 Schematic Diagram Parts Location Guide < VCR Section >

Ref No.	Position
CAPACITORS	
C554	NN-3
C561	NN-1
C563	MM-3
C565	MM-4
C567	LL-2
C570	KK-2
C571	LL-2
C573	LL-1
C574	MM-1
C575	LL-2
C577	LL-3
C578	LL-3
C579	LL-3
C582	KK-4
C583	MM-2
C589	KK-2
C594	NN-1
C595	NN-1
C605	MM-3
C606	NN-3
C607	JJ-4
C608	JJ-1
CONNECTORS	
CN207	OO-2
CN208	OO-3
CN209	JJ-3
CN210	JJ-2
DIODES	
D233	KK-1
D237	NN-4
D238	LL-1
D239	MM-2
D242	KK-2
D243	NN-4
D247	NN-4
D248	NN-4
D250	NN-3
ICS	
IC229	KK-3

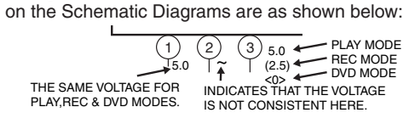
Ref No.	Position
ICS	
IC230	MM-1
IC231	KK-3
IC232	LL-3
IC233	LL-2
TRANSISTORS	
Q246	KK-2
Q247	NN-2
Q248	LL-1
Q250	LL-1
Q251	MM-4
Q252	LL-3
Q253	NN-4
Q255	NN-2
Q256	NN-4
Q257	NN-3
Q258	LL-2
Q260	LL-4
RESISTORS	
JC117	JJ-2
R583	MM-4
R584	NN-4
R586	LL-2
R588	NN-4
R590	NN-1
R591	KK-2
R593	MM-3
R594	LL-2
R595	MM-3
R596	LL-2
R597	LL-2
R598	LL-2
R599	KK-3
R600	NN-3
R601	NN-2
R602	MM-4
R603	MM-4
R604	MM-4
R605	LL-4
R606	KK-3

Ref No.	Position
RESISTORS	
R607	KK-3
R608	KK-3
R609	LL-1
R611	LL-1
R612	LL-1
R613	KK-1
R614	LL-1
R615	LL-2
R616	LL-3
R617	LL-3
R618	LL-3
R619	MM-3
R620	LL-3
R622	NN-2
R623	NN-2
R624	NN-2
R625	KK-4
R626	KK-4
R627	MM-2
R628	MM-2
R629	MM-4
R630	NN-4
R660	NN-3
R662	NN-4
R663	NN-4
R664	JJ-1
R668	JJ-1
R669	JJ-1
R671	JJ-2
R672	JJ-2
R673	KK-2
MISCELLANEOUS	
F201	KK-1
F202	JJ-1
F203	KK-2
F204	JJ-3
F205	MM-3
F206	LL-4

Main 7/7 & DVD Open/Close Schematic Diagram < VCR Section >

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

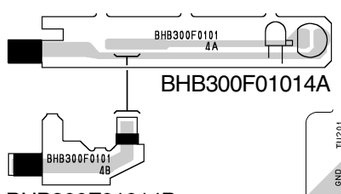


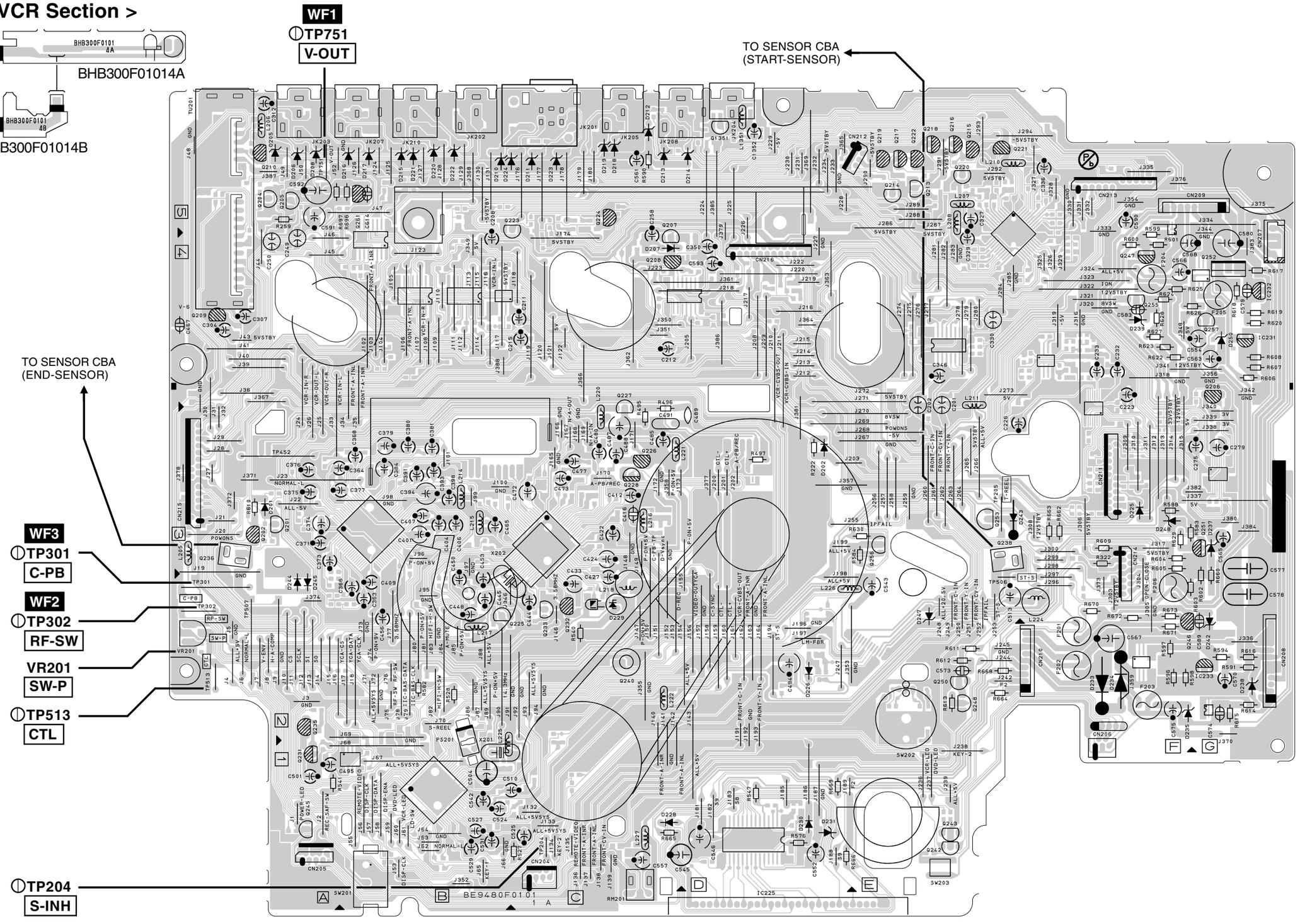
Main CBA Parts Location Guide < VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		CAPACITORS		CAPACITORS		DIODES		TRANSISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS	
C201	E-3	C319	F-5	C429	C-2	C561	C-5	D214	D-5	Q205	A-5	R213	A-4	R319	A-5	R434	A-2	R542	A-2	R666	D-1
C202	E-3	C320	F-5	C430	C-2	C563	F-4	D215	B-5	Q206	G-4	R214	B-5	R320	A-5	R435	A-3	R543	B-2	R667	E-1
C204	B-4	C321	F-5	C432	C-2	C565	G-3	D216	B-5	Q207	C-5	R215	B-4	R322	F-3	R437	A-3	R544	B-2	R668	E-2
C205	B-4	C322	F-5	C433	C-3	C567	F-2	D217	B-5	Q208	C-4	R216	A-3	R323	F-3	R438	A-2	R547	D-1	R669	D-1
C206	B-4	C323	E-5	C434	C-2	C570	G-2	D218	C-5	Q209	A-4	R217	A-3	R324	F-3	R439	B-2	R548	D-1	R671	F-2
C207	B-5	C325	E-5	C435	B-2	C571	F-2	D219	C-5	Q210	A-5	R218	A-3	R326	F-3	R440	B-3	R549	E-1	R672	F-2
C208	B-5	C326	E-5	C438	C-2	C573	E-2	D220	B-5	Q213	E-5	R219	A-5	R327	F-2	R442	B-3	R550	E-1	R673	F-2
C209	B-5	C327	E-5	C440	C-2	C574	G-2	D221	B-5	Q214	E-5	R220	A-5	R334	D-5	R443	C-3	R553	A-1	R675	C-1
C211	C4	C328	E-4	C444	C-2	C575	F-2	D222	B-5	Q215	E-5	R221	A-3	R335	D-5	R444	C-3	R556	B-1	R687	D-4
C212	C-4	C329	E-4	C445	B-2	C577	G-3	D223	C-5	Q216	E-5	R222	D-3	R337	E-4	R447	D-3	R557	B-1	R688	D-4
C214	B-4	C330	E-4	C447	B-2	C578	G-2	D224	B-5	Q217	E-5	R224	F-3	R338	E-4	R450	C-2	R558	D-1	R689	C-4
C215	C-4	C333	F-5	C448	B-2	C579	G-4	D225	F-3	Q218	E-5	R225	F-4	R339	D-5	R451	C-2	R559	D-1	R690	C-4
C216	A-4	C334	F-5	C449	B-3	C582	G-4	D226	D-2	Q219	E-5	R227	F-4	R340	E-5	R453	C-2	R561	B-1	R691	D-4
C217	B-4	C336	F-5	C450	B-3	C583	F-4	D228	C-1	Q220	E-5	R229	F-3	R342	E-5	R455	C-2	R565	C-2	R692	D-5
C218	B-5	C341	C-5	C452	B-3	C584	A-4	D229	C-2	Q221	E-5	R230	F-3	R343	E-5	R456	C-2	R567	B-2	R693	E-4
C219	A-5	C342	C-4	C455	B-3	C586	B-4	D230	D-1	Q222	E-5	R232	F-3	R345	E-5	R457	C-2	R569	B-1	R695	B-5
C220	B-4	C343	C-5	C459	B-3	C587	D-4	D233	F-2	Q223	B-5	R234	F-3	R347	E-5	R460	C-2	R571	B-2	R696	B-5
C221	B-5	C345	E-4	C460	B-3	C589	G-2	D237	G-3	Q224	C-5	R235	F-3	R349	E-5	R462	B-2	R572	B-2	R697	B-5
C222	A-4	C346	E-4	C461	B-3	C591	A-5	D238	G-2	Q226	C-3	R236	F-4	R350	E-5	R463	B-2	R574	C-1	R698	D-4
C223	F-3	C347	C-5	C463	B-3	C592	A-5	D239	F-4	Q227	C-4	R238	F-4	R351	E-5	R465	B-2	R576	D-1	R699	F-3
C224	F-4	C349	D-4	C465	B-3	C593	D-4	D242	G-2	Q228	C-3	R239	F-4	R353	E-5	R466	B-2	R577	C-1	R1351	D-5
C225	E-3	C350	D-4	C466	C-2	C594	G-2	D243	F-3	Q229	D-3	R241	F-4	R354	E-5	R468	B-2	R578	C-1	R1352	D-5
C226	E-3	C351	D-4	C467	A-4	C595	G-2	D247	E-2	Q231	A-1	R242	E-4	R355	E-5	R469	B-3	R579	D-1	R1353	D-5
C227	F-2	C354	C-4	C468	C-3	C596	A-3	D248	F-3	Q232	C-2	R244	E-4	R357	E-5	R470	A-2	R580	D-1	R1354	D-5
C230	F-3	C355	B-4	C470	C-3	C597	A-3	D250	G-4	Q233	C-2	R246	E-4	R358	E-4	R472	B-1	R582	B-2	R1355	D-5
C232	F-4	C356	B-4	C472	C-3	C598	A-3	ICS		Q235	A-2	R247	E-4	R359	E-5	R473	B-2	R583	G-3	R1356	D-5
C233	F-4	C357	B-4	C473	C-3	C599	A-3	IC201	F-4	Q240	C-2	R248	E-4	R360	E-4	R474	B-2	R584	E-3	R1357	F-3
C235	F-4	C358	B-4	C474	C-4	C600	F-3	IC202	E-4	Q242	E-1	R250	E-4	R362	E-4	R476	B-3	R586	F-2	SWITCHES	
C236	F-4	C359	F-4	C476	C-4	C601	F-2	IC203	B-4	Q243	E-1	R252	E-4	R363	E-5	R477	C-3	R588	F-3	SW201	A-1
C238	F-4	C362	E-4	C477	C-3	C602	F-3	IC206	F-3	Q245	A-1	R254	A-4	R365	E-5	R479	C-3	R590	C-5	SW202	E-1
C239	F-4	C363	B-2	C478	C-4	C603	G-3	IC208	C-4	Q246	F-2	R255	A-4	R366	E-4	R480	C-3	R591	G-2	SW203	E-1
C240	E-4	C364	B-3	C479	C-4	C605	F-4	IC209	E-4	Q247	F-4	R256	A-5	R368	E-4	R482	C-3	R593	G-4	VARIABLE RESISTOR	
C241	E-4	C366	B-2	C480	C-3	C606	F-4	IC211	C-4	Q248	E-2	R257	A-5	R369	C-5	R483	C-4	R594	G-2	VR201	A-2
C242	F-4	C368	B-3	C482	C-4	C607	F-4	IC212	B-4	Q250	E-2	R259	A-5	R370	C-5	R484	C-4	R595	G-4	CRYSTAL OSCILLATORS	
C243	F-4	C371	A-3	C487	C-3	C609	D-1	IC213	B-4	Q251	G-3	R260	A-5	R372	F-4	R485	C-4	R596	F-2	X201	B-2
C244	F-4	C373	A-3	C488	C-3	C610	D-1	IC218	B-1	Q252	G-4	R261	A-5	R373	F-4	R487	C-4	R597	F-2	X202	B-3
C247	F-4	C374	A-3	C489	D-3	C611	D-1	IC221	D-1	Q253	E-3	R263	A-5	R375	E-4	R488	C-3	R598	F-2	MISCELLANEOUS	
C248	E-4	C375	A-3	C491	C-3	C612	A-2	IC225	D-1	Q255	F-4	R264	C-4	R376	E-5	R489	C-3	R599	F-4	F201	F-2
C249	A-4	C376	A-3	C494	D-2	C1351	D-5	IC226	A-3	Q256	E-3	R266	C-4	R377	C-5	R490	C-4	R600	F-4	F202	F-2
C250	A-4	C377	B-3	C498	A-2	C1352	D-5	IC227	C-3	Q257	G-4	R267	C-4	R379	C-5	R492	C-3	R601	F-4	F203	F-2
C252	A-5	C379	B-3	C500	A-1	C1354	D-5	IC228	B-1	Q258	F-2	R268	D-5	R380	C-5	R493	C-3	R602	G-2	F204	F-4
C253	A-5	C380	B-3	C501	A-1	C1358	D-5	IC229	F-5	Q260	G-4	R270	D-5	R383	C-5	R495	C-3	R603	G-2	F205	G-4
C255	A-5	C381	B-3	C502	B-1	C1359	D-5	IC230	G-2	Q261	B-5	R271	D-5	R385	B-5	R496	C-3	R604	F-3	F206	F-2
C256	A-5	C383	B-3	C504	B-1	C1360	F-5	IC231	G-4	Q1351	D-5	R272	A-5	R386	C-5	R497	D-3	R605	F-3	JK201	C-5
C258	C-5	C384	B-3	C506	C-1	C1361	F-4	IC232	G-4	RESISTORS		R280	F-4	R387	E-4	R499	B-1	R606	G-4	JK202	B-5
C259	C-4	C386	B-3	C508	C-1	C1362	F-5	IC233	G-2	J31	A-3	R282	G-4	R388	E-3	R500	A-1	R607	G-4	JK203	A-5
C260	C-4	C388	B-3	C510	B-1	C1363	F-5	IC234	G-3	JC1	A-2	R284	G-4	R390	C-4	R502	A-2	R608	G-4	JK204	D-5
C274	F-3	C389	B-3	C512	C-1	C1364	F-5	COILS		JC05	A-3	R286	G-3	R392	B-4	R505	A-2	R609	F-3	JK205	C-5
C275	G-3	C390	B-3	C513	E-2	J373	F-3	L205	A-3	JC101	D-5	R287	G-3	R393	C-4	R512	C-1	R611	E-2	JK207	B-5
C277	G-3	C393	B-3	C515	D-2	J378	A-3	L206	A-5	JC102	B-3	R288	F-3	R394	B-4	R513	C-1	R612	E-2	JK208	C-5
C278	G-3	C394	B-3	C516	B-1	CONNECTORS		L207	E-5	JC103	B-1	R289	F-3	R395	B-4	R514	D-2	R613	G-2	JK210	B-5
C279	G-3	C395	B-3	C518	C-2	CN204	C-1	L208	E-5	JC104	B-2	R290	F-3	R397	B-4	R517	D-2	R614	G-2	RM201	C-1
C289	F-4	C400	B-3	C520	D-2	CN205	A-1	RESISTORS		JC106	A-3	R292	F-3	R404	B-4	R518	D-2	R615	G-2	TU201	A-5
C290	C-5	C401	B-3	C523	B-1	CN207	G-4	L210	E-5	JC107	E-3	R293	B-5	R405	B-4	R521	B-1	R616	G-4	TEST POINTS	
C292	B-5	C402	B-3	C524	B-1	CN208	G-2	L211	E-4	JC114	F-4	R294	C-5	R406	B-4	R522	B-1	R617	G-4	TP204	C-1
C293	B-5	C403	B-3	C525	C-1	CN209	F-5	L214	B-3	JC116	F-5	R296	C-5	R410	A-5	R523	B-1	R618	G-4	TP205	E-3
C294	B-5	C404	B-3	C527	B-1	CN210	F-2	L215	B-3	JC117	G-5	R297	D-5	R411	C-4	R524	C-1	R619	G-4	TP301	A-2
C297	C-5	C406	B-3	C529	B-1	CN211	F-3	L217	B-2	JC118	F-5	R298	B-5	R413	E-5	R525	A-1	R620	F-4	TP302	A-2
C298	C-5	C407	B-3	C530	B-1	CN212	D-5	L218	C-2	JC119	F-5	R299	C-4	R414	E-5	R526	B-1	R622	F-4	TP452	A-3
C299	F-4	C410	B-2	C531	B-1	CN213	F-4	L220	C-4	JC121	A-4	R300	C-5	R415	D-5	R527	C-1	R623	F-4	TP506	E-2
C300	F-5	C412	C-3	C533	B-1	CN214	F-3	L221	D-3	R201	B-5	R302	C-5	R416	D-5	R528	B-2	R624	F-4	TP507	A-2
C302	E-5	C414	C-3	C535	A-2	CN215	A-3	L222	C-2	R202	B-4	R303	C-5	R419	E-4	R529	C-1	R625	F-4	TP513	A-2
C303	A-4	C416	C-3	C538	A-2	CN216	D-4	L224	F-2	R203	B-4	R304	D-5	R423	A-3	R530	E-2	R626	F-4	TP751	A-5
C304	A-4	C417	D-3	C543	E-2	DIODES		L226	D-2	R204	B-5	R306	B-5	R424	A-3	R531	E-2	R627	F-4		
C306	A-5	C418	D-3	C545	C-1	D205	A-5	L227	C-1	R205	B-4	R308	C-5	R425	A-3	R532	E-2	R628	F-4		
C307	A-4	C420	C-3	C551	D-1	D206	A-5	L228	F-3	R206	B-4	R310	B-5	R426	A-3	R533	E-2	R629	F-3		
C308	A-4	C422	C-3	C552	D-1	D207	C-4	L1351	D-5	R207	F-3	R312	A-4	R427	B-3	R534	E-2	R630	E-3		
C310	A-5	C423	C-3	C554	F-4	D208	A-5	TRANSISTORS		R208	G-4	R313	A-4	R428	B-3	R535	E-3	R660	G-2		
C312	A-5	C424	C-3	C556	C-1	D210	B-5	Q201	A-3	R209	F-3	R314	A-5	R429	B-3	R538	D-2	R662	F-3		
C316	E-4	C425	C-3	C557	C-1	D211	C-5	Q202	A-3	R210	F-3	R315	A-4	R430	A-2	R539	A-2	R663	F-3		
C317	F-5	C427	C-2	C558	C-1	D212	C-5	Q203	F-3	R211	C-4	R316	A-4	R432	B-2	R540	C-2	R664	E-2		
C318	F-5	C428	C-3	C559	D-1	D213	C-5	Q204	A-5	R212	B-4	R318	A-5	R433	A-2	R541	A-1	R665	C-1		

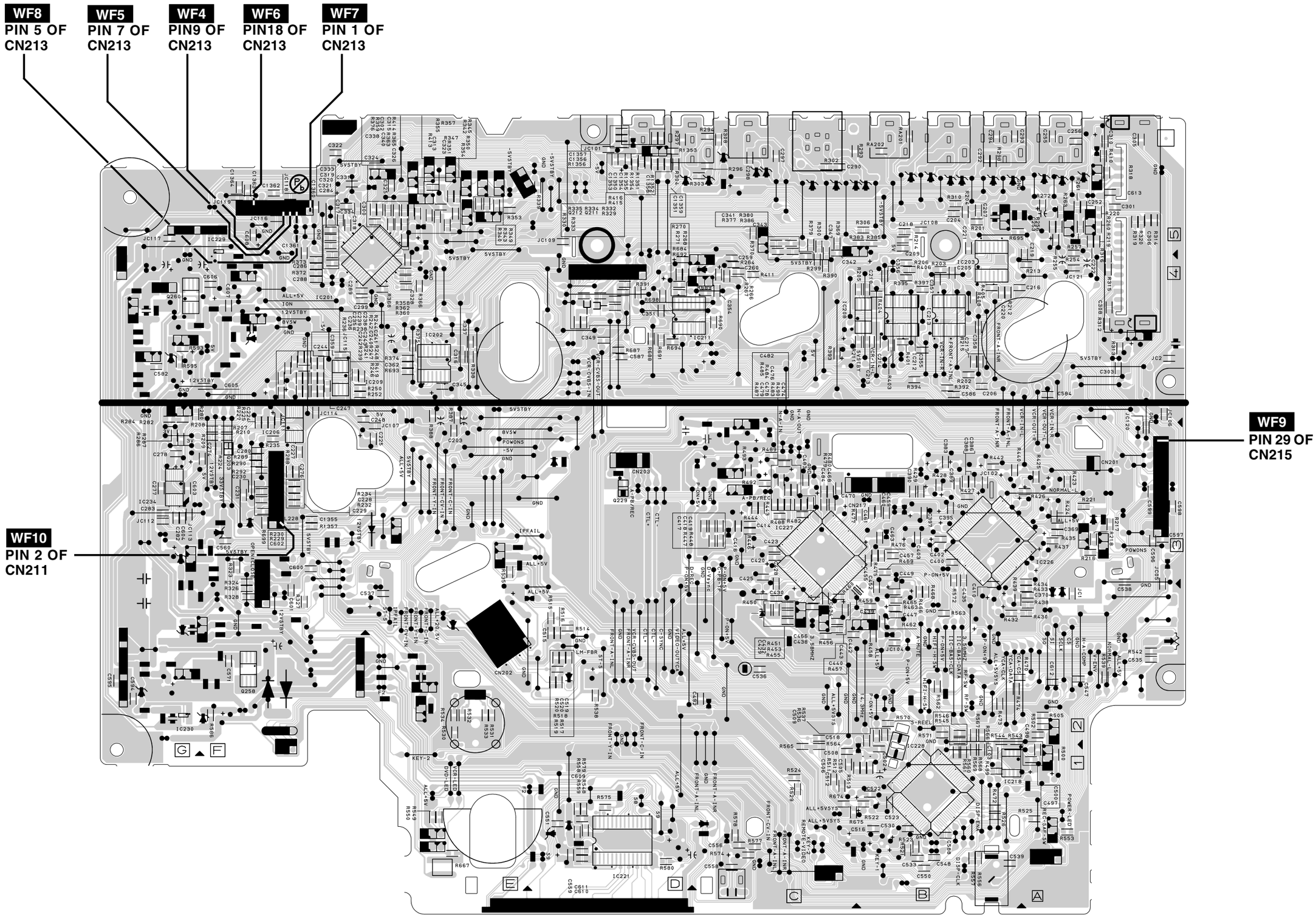
Main CBA Top View < VCR Section >

Sensor CBA Top View
< VCR Section >

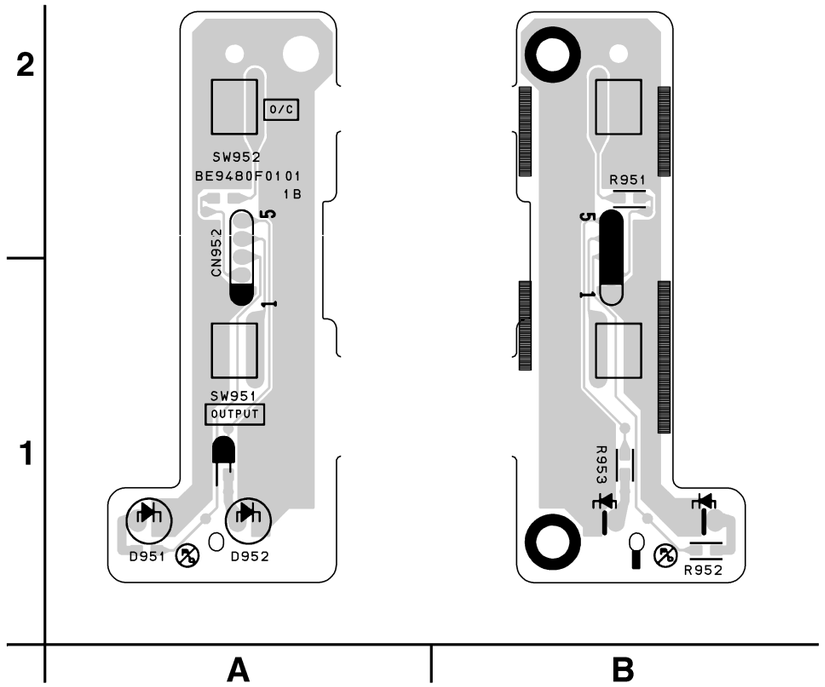




Main CBA Bottom View < VCR Section >



Function CBA Top View
< VCR Section >



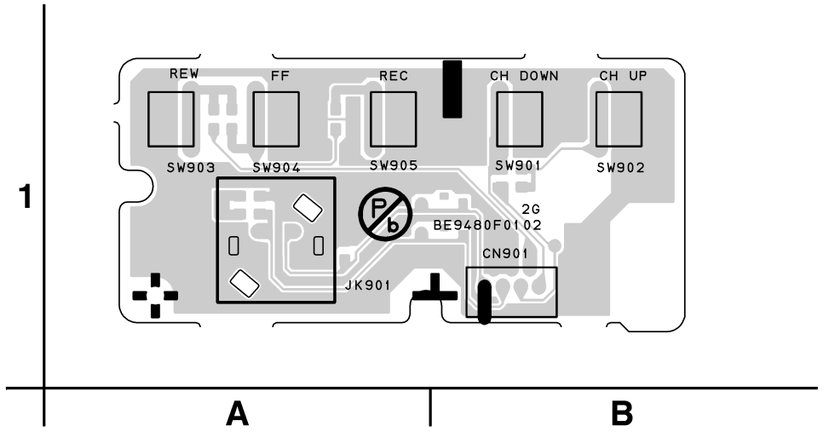
Function CBA Bottom View
< VCR Section >

FUNCTION CBA
PARTS LOCATION GUIDE

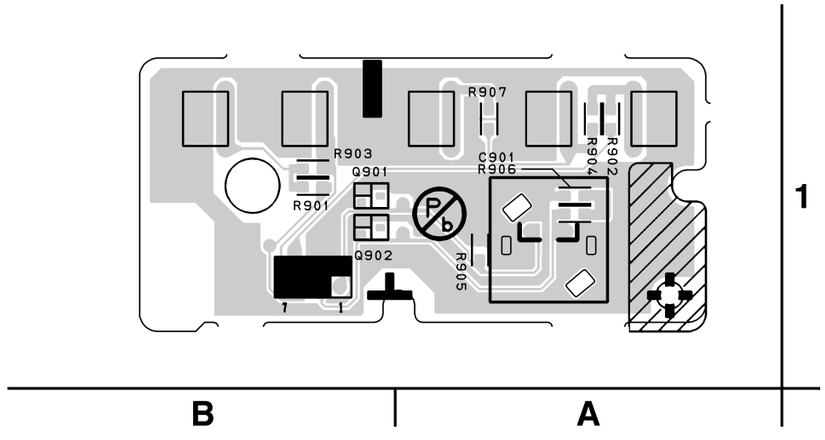
Ref No.	Position
DIODES	
D951	A-1
D952	A-1
RESISTORS	
R951	B-2
R952	B-1
R953	B-1
SWITCHES	
SW951	A-1
SW952	A-2

BE9480F01011B

Jack-B CBA Top View < VCR Section >



Jack-B CBA Bottom View < VCR Section >



JACK-B CBA
PARTS LOCATION GUIDE

Ref No.	Position
CAPACITOR	
C901	A-1
CONNECTOR	
CN901	B-1
TRANSISTORS	
Q901	B-1
Q902	B-1
RESISTORS	
R901	B-1
R902	A-1
R903	B-1
R904	A-1
R905	A-1
R906	A-1
R907	A-1
SWITCHES	
SW901	B-1
SW902	B-1
SW903	A-1
SW904	A-1
SW905	A-1
MISCELLANEOUS	
JK901	A-1

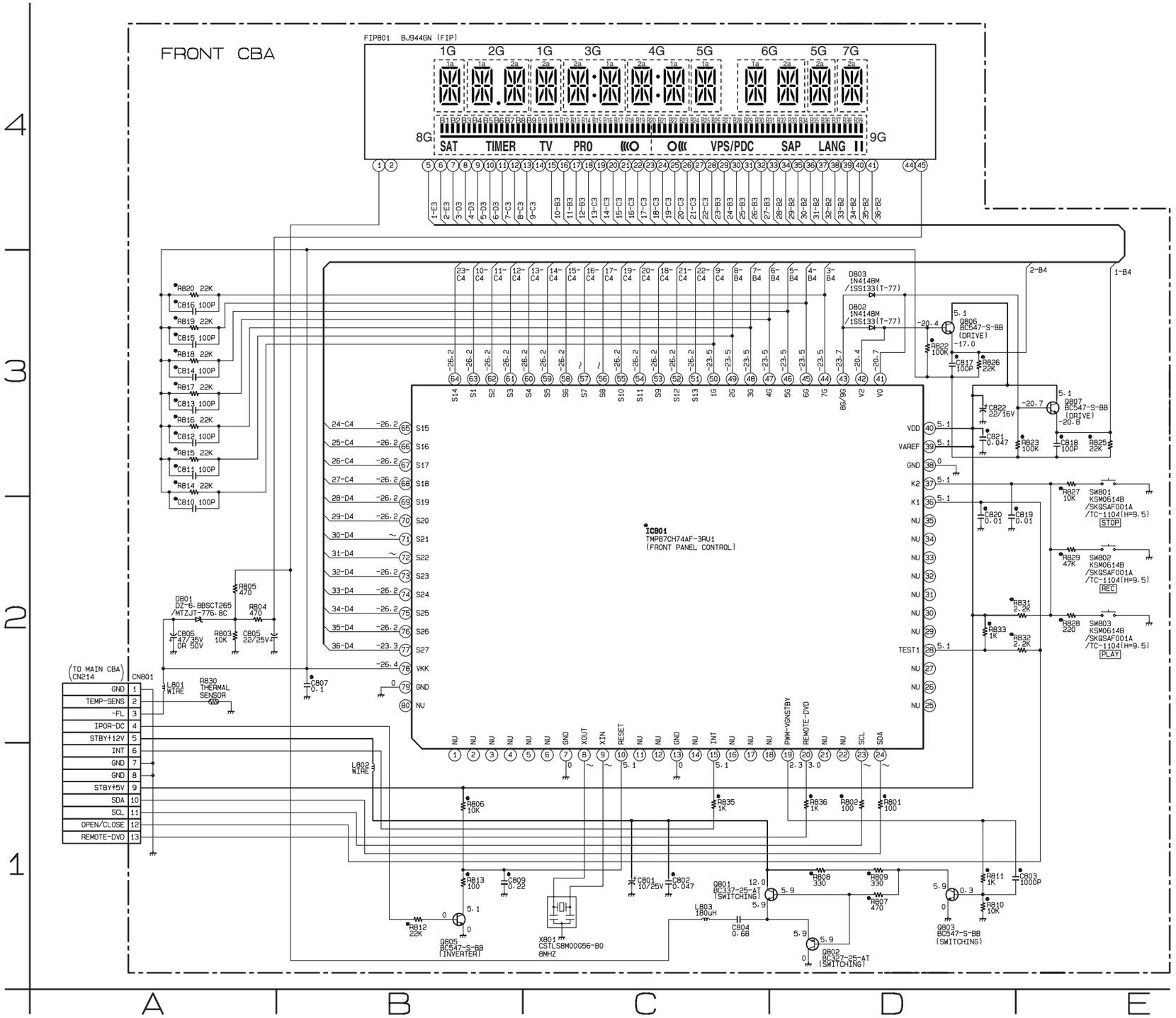
BE9480F01022G

Front Schematic Diagram < VCR Section >

"●" = SMD

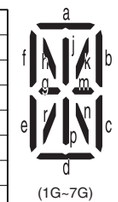
Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:

1 5.0 — THE SAME VOLTAGE FOR PLAY,REC & DVD MODES.
2 ~ — INDICATES THAT THE VOLTAGE IS NOT CONSISTENT HERE.
3 5.0 PLAY MODE / (2.5) REC MODE / <0> DVD MODE



FIP801 MATRIX CHART

	1G	2G	3G	4G	5G	6G	7G	8G	9G
S1	2a	2a	2a	2a	2a	2a	2a	B1	B21
S2	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	2j, 2p	B2	B22
S3	2h	2h	2h	2h	2h	2h	2h	B3	B23
S4	2k	2k	2k	2k	2k	2k	2k	B4	B24
S5	2b	2b	2b	2b	2b	2b	2b	B5	B25
S6	2f	2f	2f	2f	2f	2f	2f	B6	B26
S7	2m	2m	2m	2m	2m	2m	2m	B7	B27
S8	2g	2g	2g	2g	2g	2g	2g	B8	B28
S9	2c	2c	2c	2c	2c	2c	2c	B9	B29
S10	2e	2e	2e	2e	2e	2e	2e	---	---
S11	2r	2r	2r	2r	2r	2r	2r	(((O	O (((
S12	2n	2n	2n	2n	2n	2n	2n	B10	B30
S13	2d	2d	2d	2d	2d	2d	2d	B11	B31
S14	---	•	•	•	---	---	---	B12	B32
S15	1a	1a	1a	1a	1a	1a	---	B13	B33
S16	1j, 1p	1j, 1p	1j, 1p	1j, 1p	1j, 1p	1j, 1p	---	B14	B34
S17	1h	1h	1h	1h	1h	1h	---	B15	B35
S18	1k	1k	1k	1k	1k	1k	---	B16	B36
S19	1b	1b	1b	1b	1b	1b	---	B17	B37
S20	1f	1f	1f	1f	1f	1f	---	B18	B38
S21	1m	1m	1m	1m	1m	1m	---	B19	B39
S22	1g	1g	1g	1g	1g	1g	---	B20	B20
S23	1c	1c	1c	1c	1c	1c	---	---	---
S24	1e	1e	1e	1e	1e	1e	---	SAT	VPS/PDC
S25	1r	1r	1r	1r	1r	1r	---	TIMER	SAP
S26	1m	1m	1m	1m	1m	1m	---	TV	LANG ▌
S27	1d	1d	1d	1d	1d	1d	---	PR0	▌

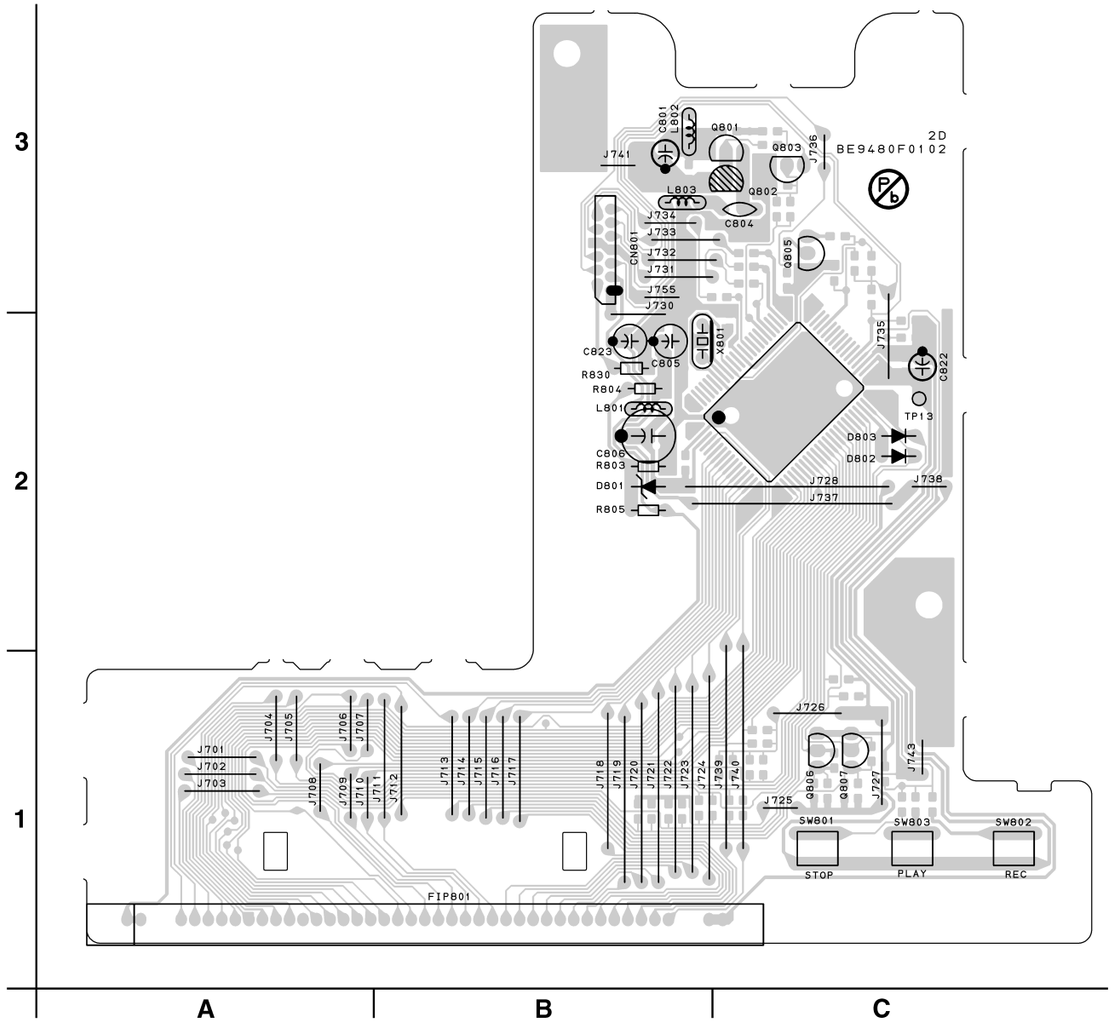


(1G~7G)

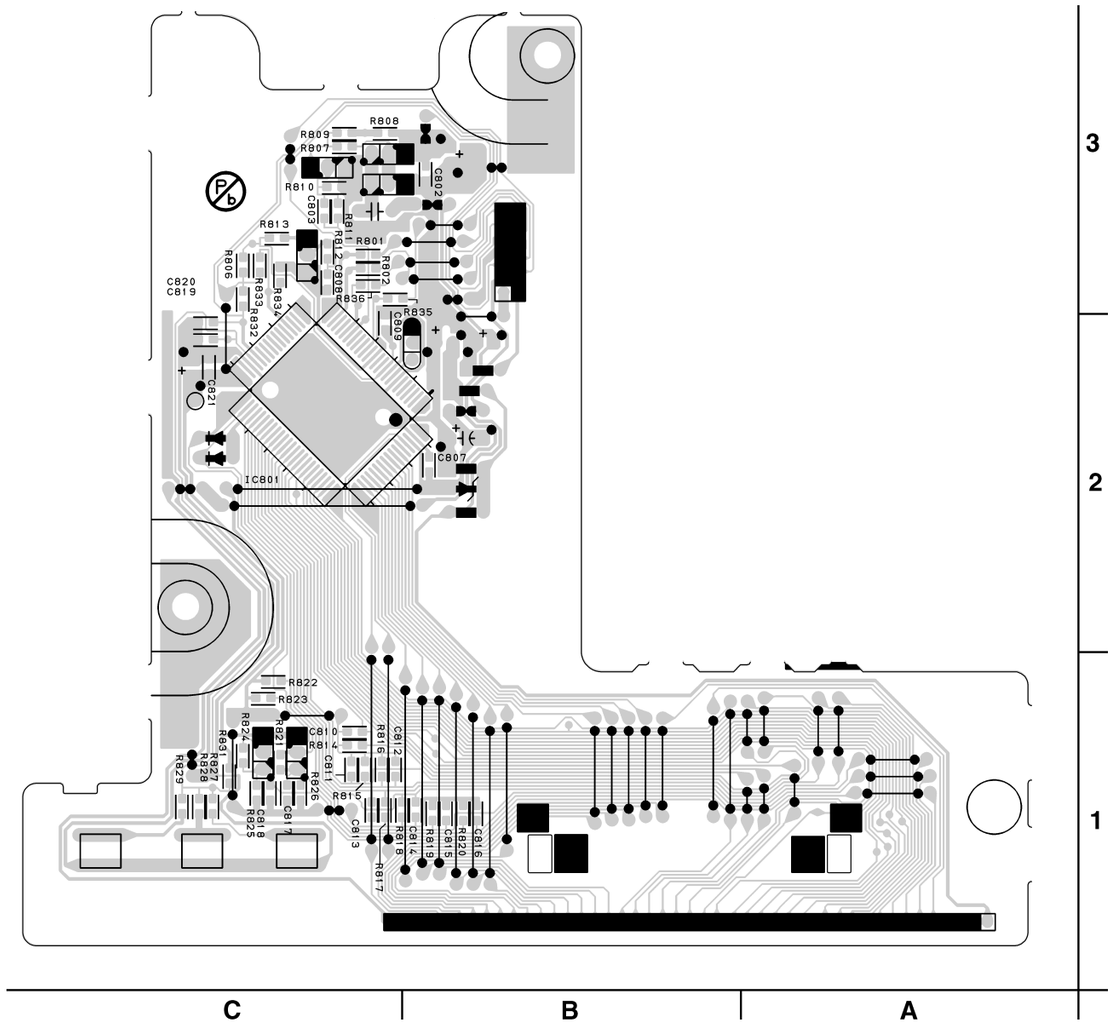
FRONT SCHEMATIC DIAGRAM PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		COILS		RESISTORS	
C801	C-1	L801	A-2	R819	A-3
C802	C-1	L802	B-1	R820	A-3
C803	E-1	L803	C-1	R822	E-3
C804	D-1	TRANSISTORS		R823	E-3
C805	B-2	Q801	D+1	R825	F-3
C806	A-2	Q802	D-1	R826	E-3
C807	B-2	Q803	D-1	R827	E-3
C809	C-1	Q805	B-1	R828	E-2
C810	A-2	Q806	E-3	R829	E-2
C811	A-3	Q807	E-3	R830	A-2
C812	A-3	RESISTORS		R831	E-2
C813	A-3	R801	D-1	R832	E-2
C814	A-3	R802	D-1	R833	E-2
C815	A-3	R803	A-2	R835	C-1
C816	A-3	R804	B-2	R836	D-1
C817	E-3	R805	A-2	SWITCHES	
C818	E-3	R806	B-1	SW801	E-3
C819	E-2	R807	D-1	SW802	E-2
C820	E-2	R808	D-1	SW803	E-2
C821	E-3	R809	D-1	CRYSTAL OSCILLATOR	
C822	E-3	R810	E-1	X801	C-1
CONNECTOR		R811	E-1	MISCELLANEOUS	
CN801	A-2	R812	B-1	FIP801	C-4
DIODES		R813	B-1		
D801	A-2	R814	A-3		
D802	D-3	R815	A-3		
D803	D-3	R816	A-3		
IC		R817	A-3		
IC801	C-2	R818	A-3		

Front CBA Top View < VCR Section >



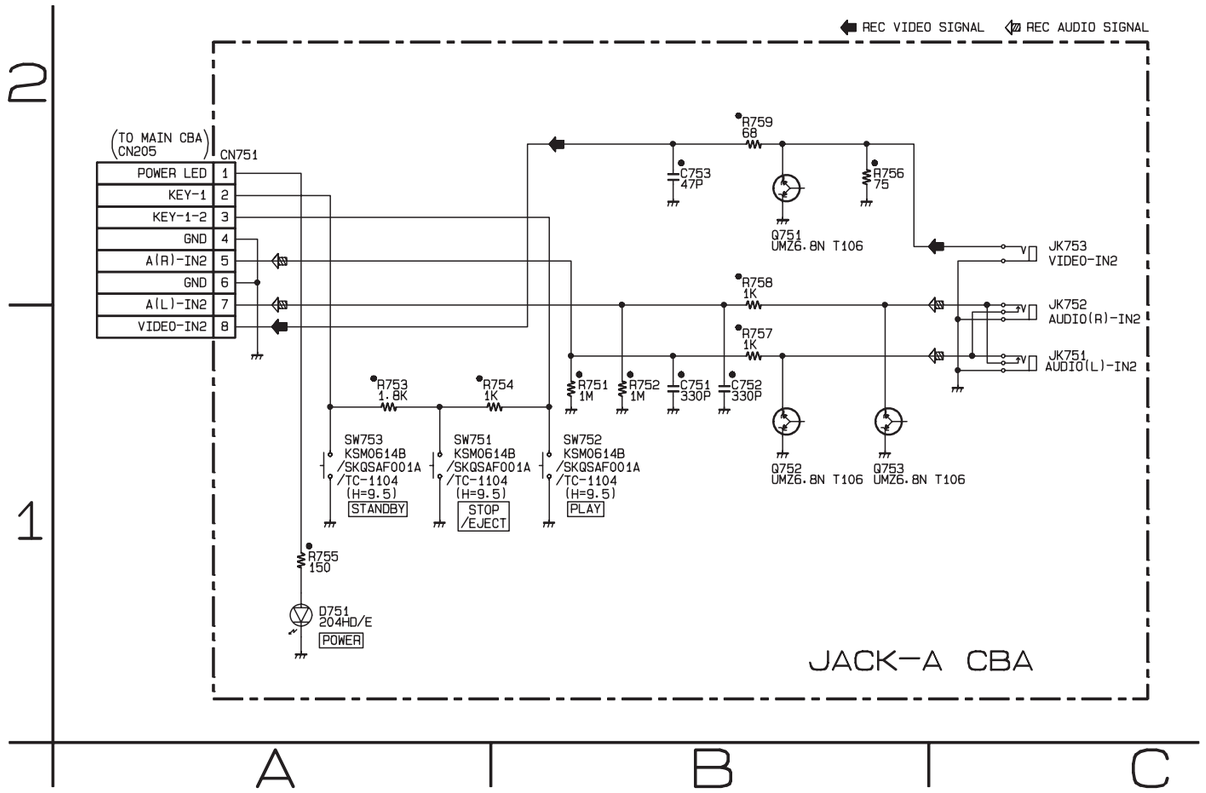
Front CBA Bottom View < VCR Section >



FRONT CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		CAPACITORS		CAPACITORS		IC		TRANSISTORS		RESISTORS		RESISTORS		RESISTORS		RESISTORS	
C801	B-3	C811	C-1	C820	C-3	IC801	C-2	Q805	C-3	R806	C-3	R815	C-1	R826	C-1	R836	C-3
C802	B-3	C812	C-1	C821	C-2	COILS		Q806	C-1	R807	C-3	R816	C-1	R827	C-1	SWITCHES	
C803	C-3	C813	C-1	C822	C-2	L801	B-2	Q807	C-1	R808	C-3	R817	C-1	R828	C-1	SW801	C-1
C804	C-3	C814	B-1	CONNECTOR		L802	B-3	RESISTORS		R809	C-3	R818	C-1	R829	C-1	SW802	C-1
C805	B-2	C815	B-1	CN801	B-3	L803	B-3	R801	C-3	R810	C-3	R819	B-1	R830	B-2	SW803	C-1
C806	B-2	C816	B-1	DIODES		TRANSISTORS		R802	C-3	R811	C-3	R820	B-1	R831	C-1	CRYSTAL OSCILLATOR	
C807	B-2	C817	C-1	D801	B-2	Q801	C-3	R803	B-2	R812	C-3	R822	C-1	R832	C-2	X801	C-2
C809	C-2	C818	C-1	D802	C-2	Q802	C-3	R804	B-2	R813	C-3	R823	C-1	R833	C-3	MISCELLANEOUS	
C810	C-1	C819	C-3	D803	C-2	Q803	C-3	R805	B-2	R814	C-1	R825	C-1	R835	B-2	FIP801	B-1

Jack-A Schematic Diagram < VCR Section >



E9480SCJK

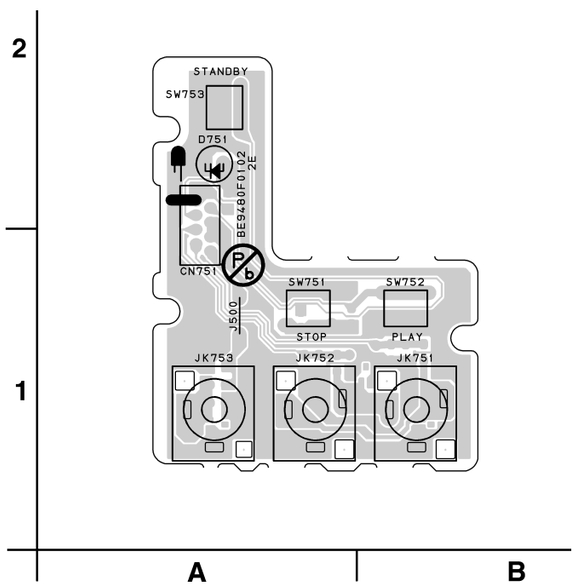
JACK-A SCHEMATIC DIAGRAM
PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C751	B-1	R754	B-1
C752	B-1	R755	A-1
C753	B-2	R756	B-2
CONNECTOR		R757	B-1
CN751	A-2	R758	B-2
DIODE		R759	B-2
D751	A-1	SWITCHES	
TRANSISTORS		SW751	A-1
Q751	B-2	SW752	B-1
Q752	B-1	SW753	A-1
Q753	B-1	MISCELLANEOUS	
RESISTORS		JK751	C-2
R751	B-1	JK752	C-1
R752	B-1	JK753	C-2
R753	A-1		

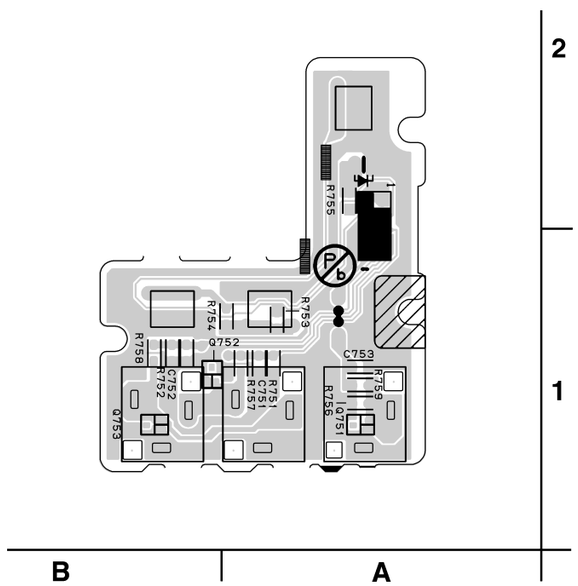
Power Supply Schematic Diagram
Parts Location Guide
< VCR Section >

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		DIODES		RESISTORS	
C1001	D-4	D1012	A-4	R1004	E-3
C1002	D-4	D1013	A-4	R1005	E-2
C1003	D-4	D1014	B-4	R1006	C-1
C1004	D-3	D1015	B-4	R1007	D-1
C1005	D-3	D1016	C-3	R1008	D-1
C1006	D-3	D1017	C-3	R1009	D-1
C1008	D-3	D1018	C-3	R1010	D-1
C1010	D-2	D1019	B-2	R1011	D-1
C1011	D-2	D1021	B-2	R1012	D-1
C1012	D-2	D1022	B-2	R1013	D-1
C1013	D-1	D1023	B-2	R1014	D-1
C1014	D-1	D1024	D-2	R1015	C-3
C1015	A-3	D1025	D-2	R1016	B-3
C1016	C-3	D1026	D-2	R1017	B-3
C1017	B-3	D1029	E-4	R1018	B-3
C1018	C-3	D1030	D-4	R1019	B-3
C1019	A-3	IC		R1020	C-3
C1020	C-3	IC010	C-1	R1021	B-3
C1021	B-2	COILS		R1022	B-2
C1022	B-2	L1001	D-4	R1023	B-2
C1023	B-2	L1002	D-4	R1024	B-2
C1024	B-1	L1003	D-3	R1025	B-2
C1026	D-4	L1004	D-3	R1026	B-2
C1027	D-4	L1005	A-4	R1027	B-2
DIODES		L1006	D-3	R1028	B-1
D1001	D-4	L1007	C-3	R1029	B-4
D1002	D-4	L1008	D-2	R1030	D-2
D1003	D-3	L1009	D-2	R1031	D-2
D1004	D-3	TRANSISTORS		R1033	B-2
D1005	D-4	Q031	D-1	MISCELLANEOUS	
D1006	D-3	Q1001	C-3	AC1001	A-4
D1007	B-3	Q1003	B-3	F1001	A-4
D1008	D-2	Q1008	B-2	GP1001	A-3
D1009	D-2	RESISTORS		SA1001	A-4
D1010	D-1	R1002	D-4	T1001	C-4
D1011	D-1	R1003	E-4		

Jack-A CBA Top View < VCR Section >



Jack-A CBA Bottom View < VCR Section >



JACK-A CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position
CAPACITORS		RESISTORS	
C751	A-1	R754	B-1
C752	B-1	R755	A-2
C753	A-1	R756	A-1
CONNECTOR		R757	A-1
CN751	A-1	R758	B-1
DIODE		R759	A-1
D751	A-2	SWITCHES	
TRANSISTORS		SW751	A-1
Q751	A-1	SW752	B-1
Q752	A-1	SW753	A-2
Q753	B-1	MISCELLANEOUS	
RESISTORS		JK751	B-1
R751	A-1	JK752	A-1
R752	B-1	JK753	A-1
R753	A-1		

Power Supply Schematic Diagram < VCR Section >

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

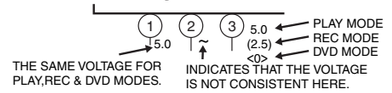
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

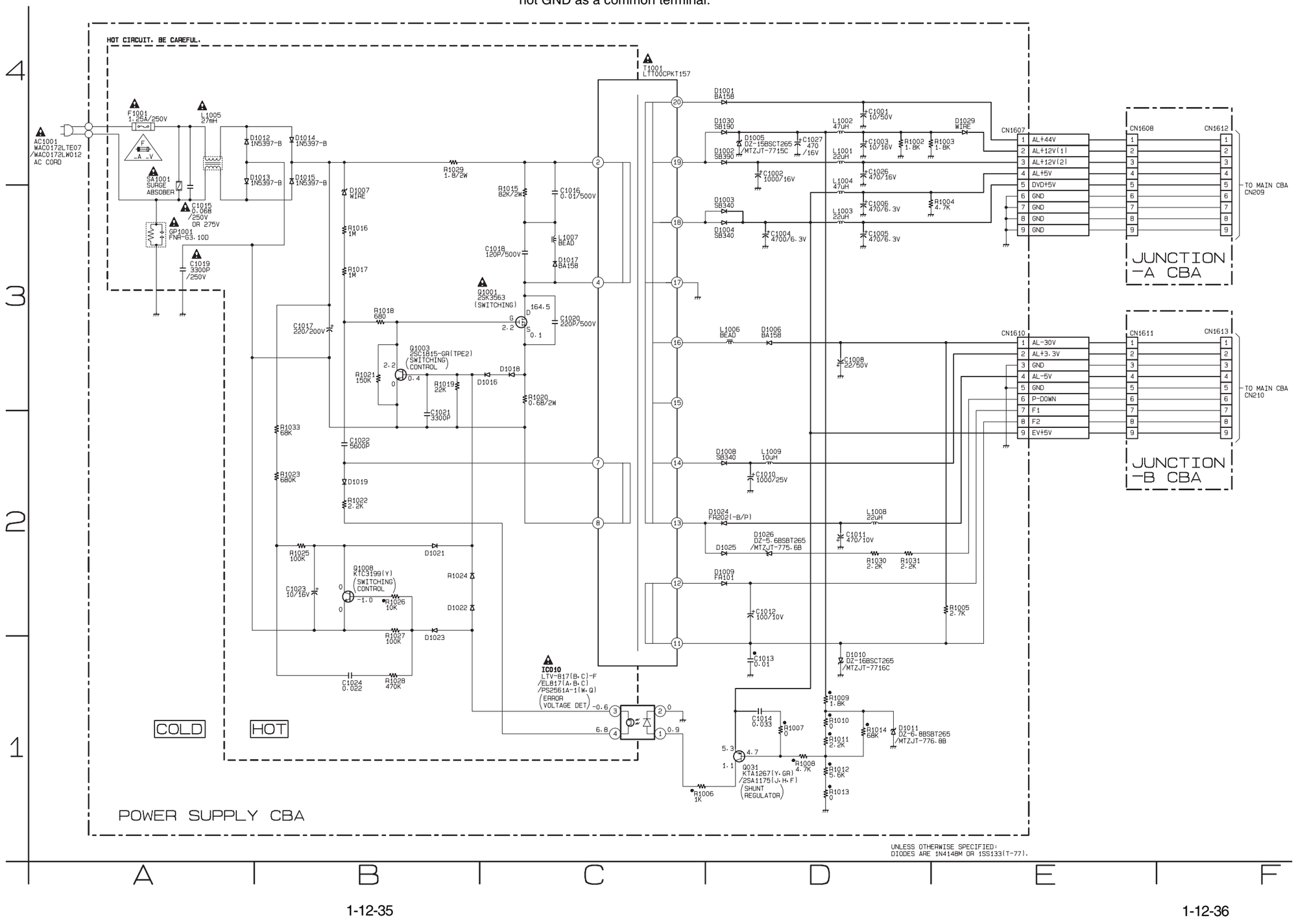
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

"●" = SMD

Voltage indications for PLAY, REC and DVD modes on the Schematic Diagrams are as shown below:





Power Supply CBA Top View < VCR Section >

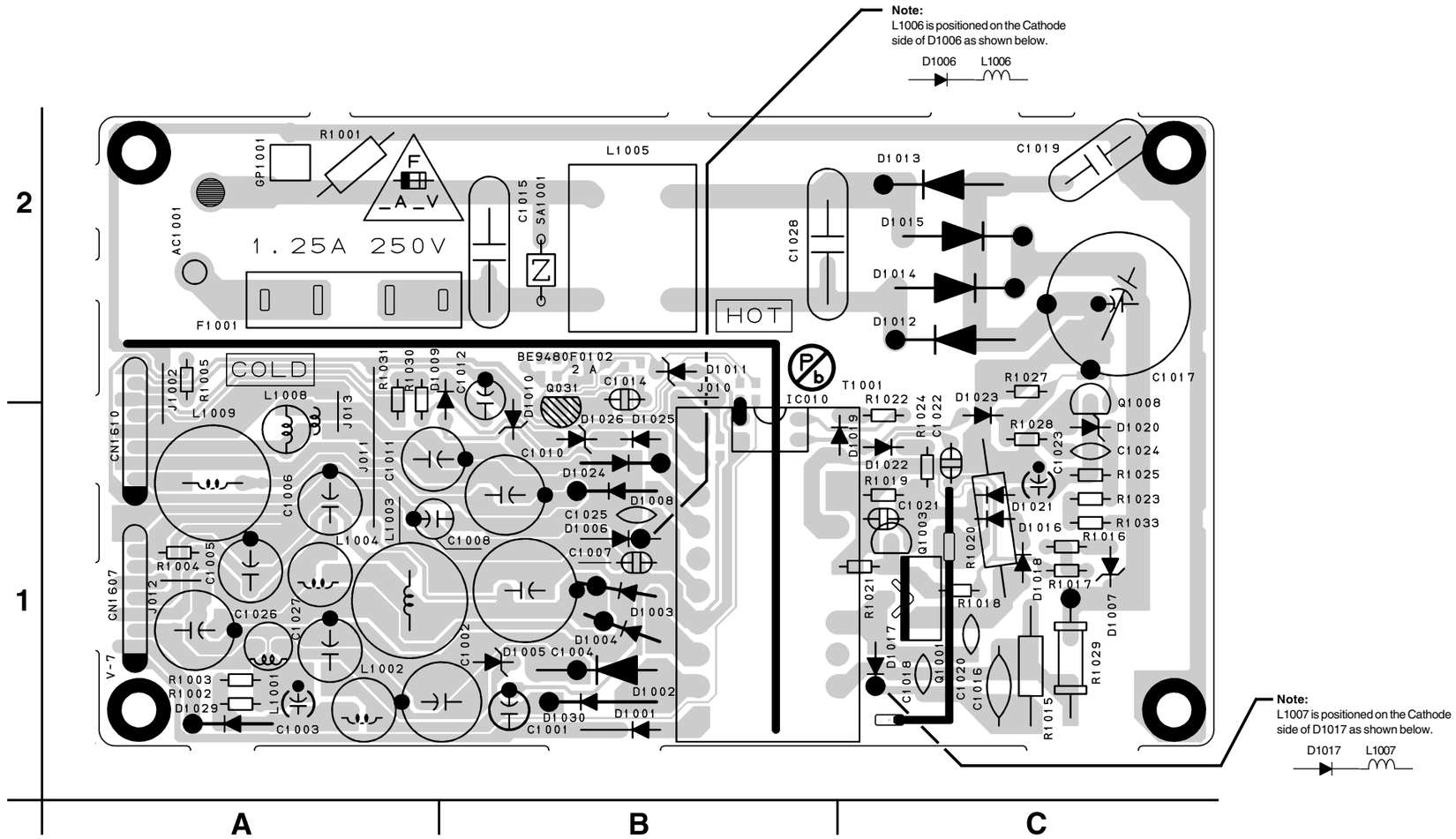
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



POWER CBA PARTS LOCATION GUIDE

Ref No.	Position	Ref No.	Position	Ref No.	Position
CAPACITORS		DIODES		RESISTORS	
C1001	B-1	D1012	C-2	R1004	A-1
C1002	B-1	D1013	C-2	R1005	A-2
C1003	.A-1	D1014	C-2	R1006	B-2
C1004	B-1	D1015	C-2	R1007	B-2
C1005	A-1	D1016	C-1	R1008	B-2
C1006	A-1	D1017	C-1	R1009	B-2
C1008	B-1	D1018	C-1	R1010	B-2
C1010	B-1	D1019	C-1	R1011	B-2
C1011	A-1	D1021	C-1	R1012	B-2
C1012	B-2	D1022	C-1	R1013	B-2
C1013	B-1	D1023	C-1	R1014	A-2
C1014	B-2	D1024	B-41	R1015	C-1
C1015	B-2	D1025	B-1	R1016	C-1
C1016	C-1	D1026	B-1	R1017	C-1
C1017	C-2	D1029	A-1	R1018	C-1
C1018	C-1	D1030	B-1	R1019	C-1
C1019	C-2	IC		R1020	C-1
C1020	C-1	IC010	B-1	R1021	C-1
C1021	C-1	COILS		R1022	C-1
C1022	C-1	L1001	A-1	R1023	C-1
C1023	C-1	L1002	A-1	R1024	C-1
C1024	C-1	L1003	A-1	R1025	C-1
C1026	A-1	L1004	A-1	R1026	C-2
C1027	A-1	L1005	B-2	R1027	C-2
DIODES		L1006	B-1	R1028	C-1
D1001	B-1	L1007	C-1	R1029	C-1
D1002	B-1	L1008	A-2	R1030	A-2
D1003	B-1	L1009	A-1	R1031	A-2
D1004	B-1	TRANSISTORS		R1033	C-1
D1005	B-1	Q031	B-2	MISCELLANEOUS	
D1006	B-1	Q1001	C-1	AC1001	A-2
D1007	C-1	Q1003	C-1	F1001	A-2
D1008	B-1	Q1008	C-1	GP1001	A-2
D1009	A-2	RESISTORS		SA1001	B-2
D1010	B-1	R1002	A-1	T1001	C-2
D1011	B-2	R1003	A-1		

Power Supply CBA Bottom View < VCR Section >

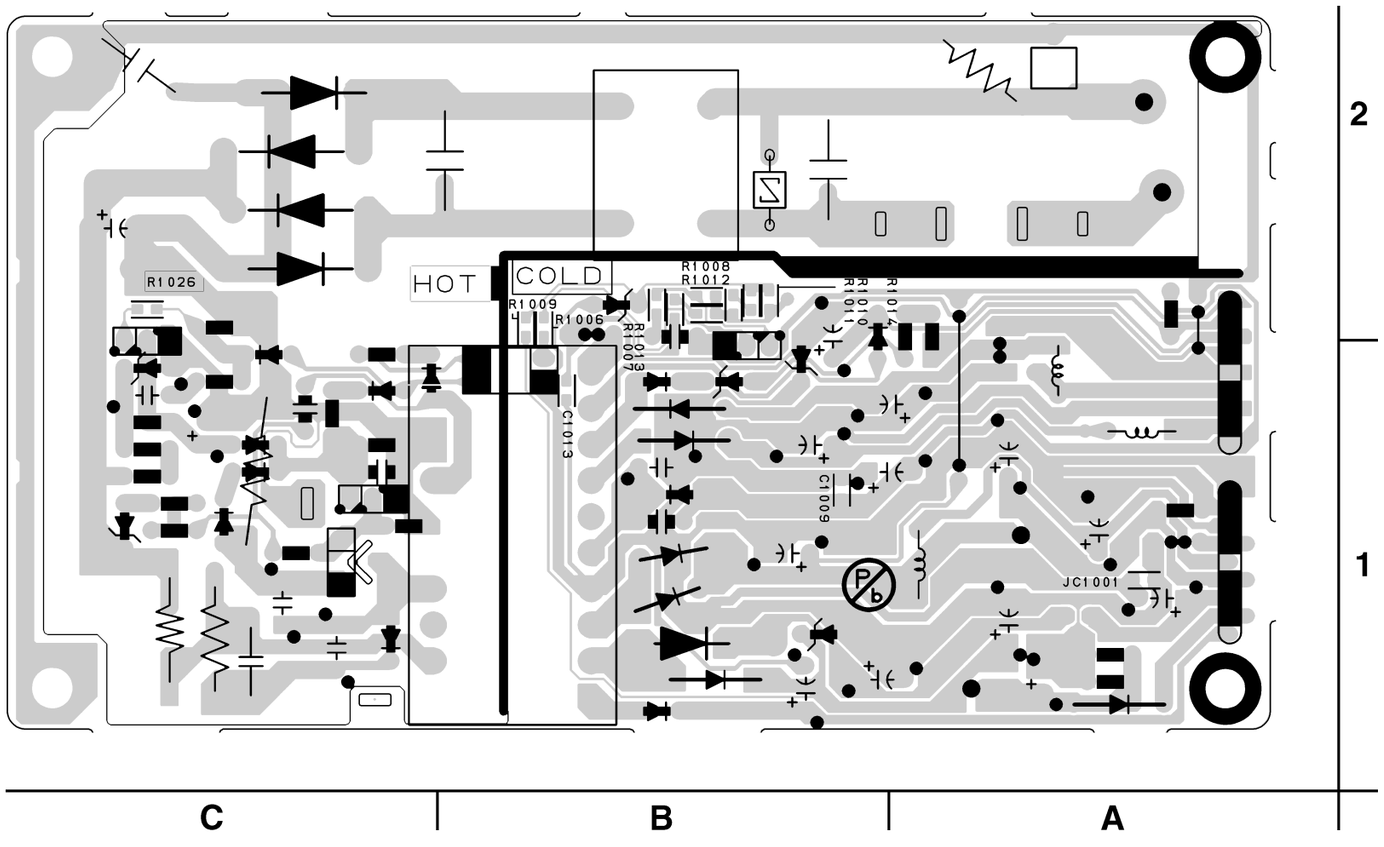
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

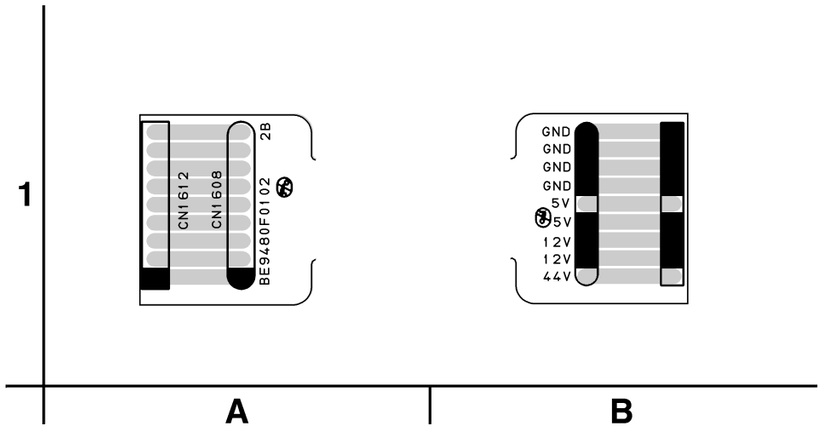
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



BE9480F01022A

Junction-A CBA
Top View
< VCR Section >

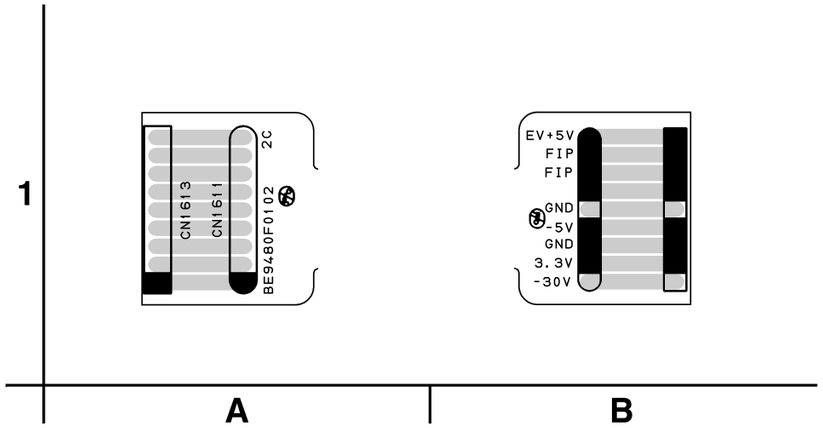
Junction-A CBA
Bottom View
< VCR Section >



BE9480F01022B

Junction-B CBA
Top View
< VCR Section >

Junction-B CBA
Bottom View
< VCR Section >

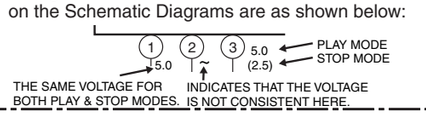


BE9480F01022C

CPU 1/2 Schematic Diagram < DVD Section >

"●" = SMD

Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:



CPU 2/2 Schematic Diagram < DVD Section >

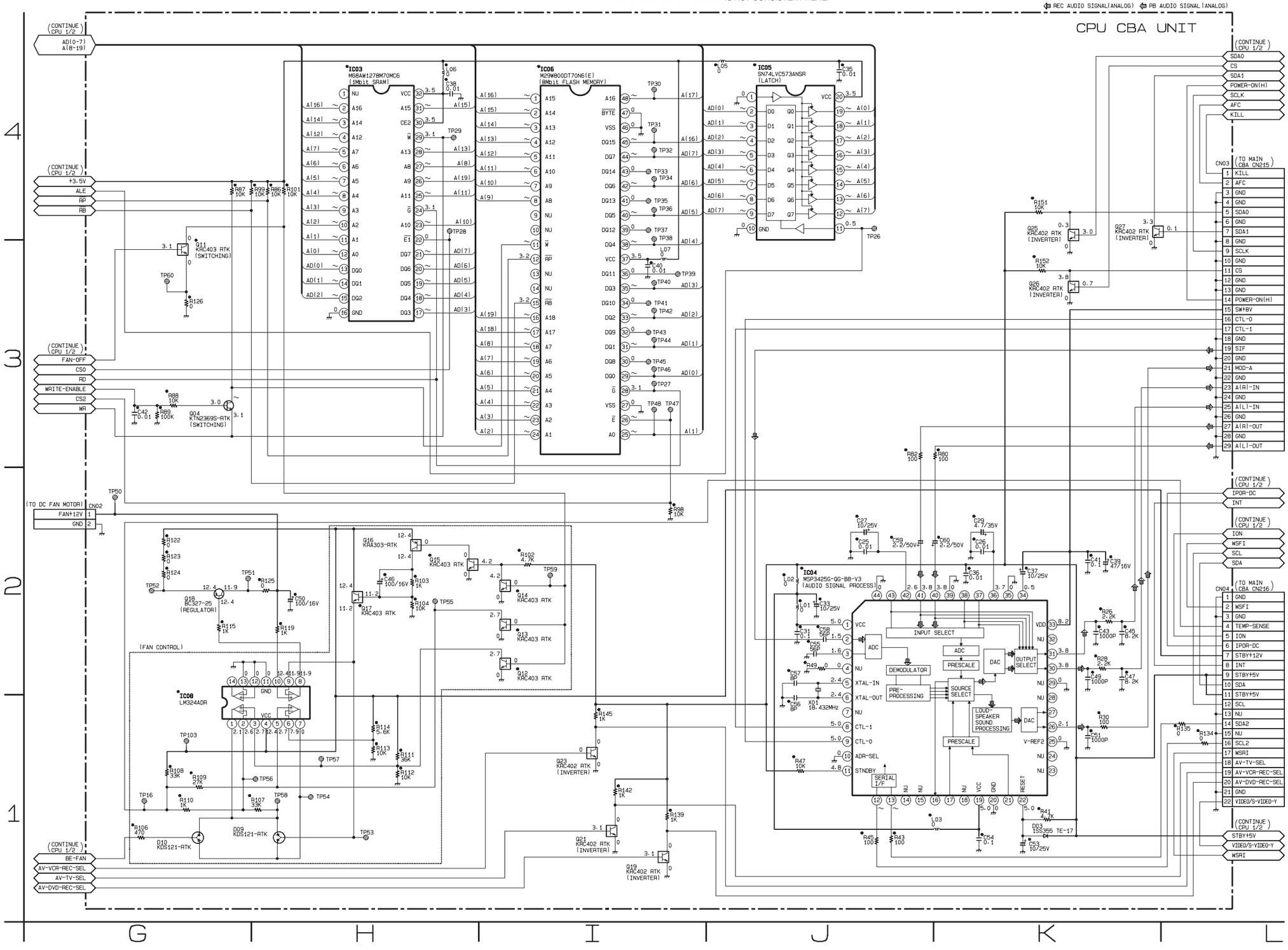
Voltage indications for PLAY and STOP modes on the Schematic Diagrams are as shown below:

(1) 5.0 — THE SAME VOLTAGE FOR BOTH PLAY & STOP MODES.

(2) ~ — INDICATES THAT THE VOLTAGE IS NOT CONSISTENT HERE.

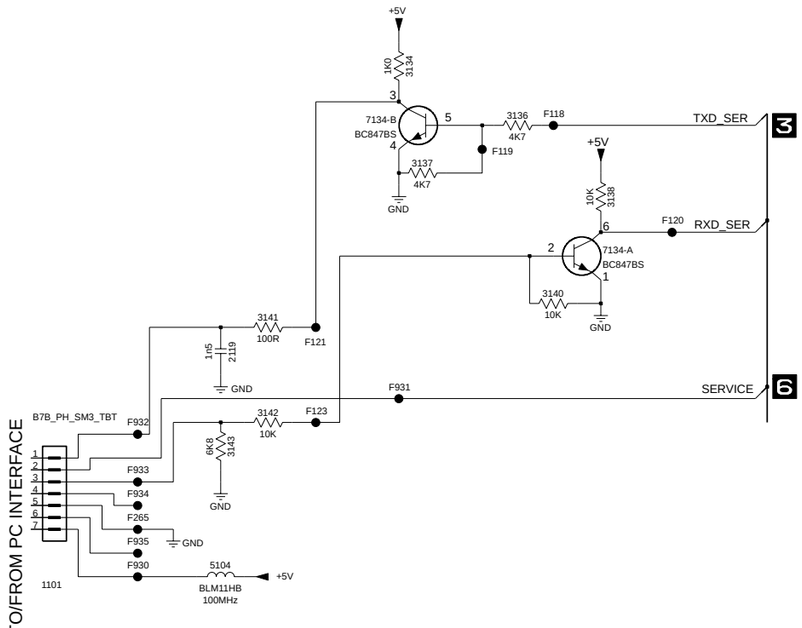
(3) 5.0 (2.5) — PLAY MODE / STOP MODE

"●" = SMD



Digital Board Unit 1/10 Schematic Diagram < DVD Section >

M 1 RESET,UART,SERVICE,E_LINK

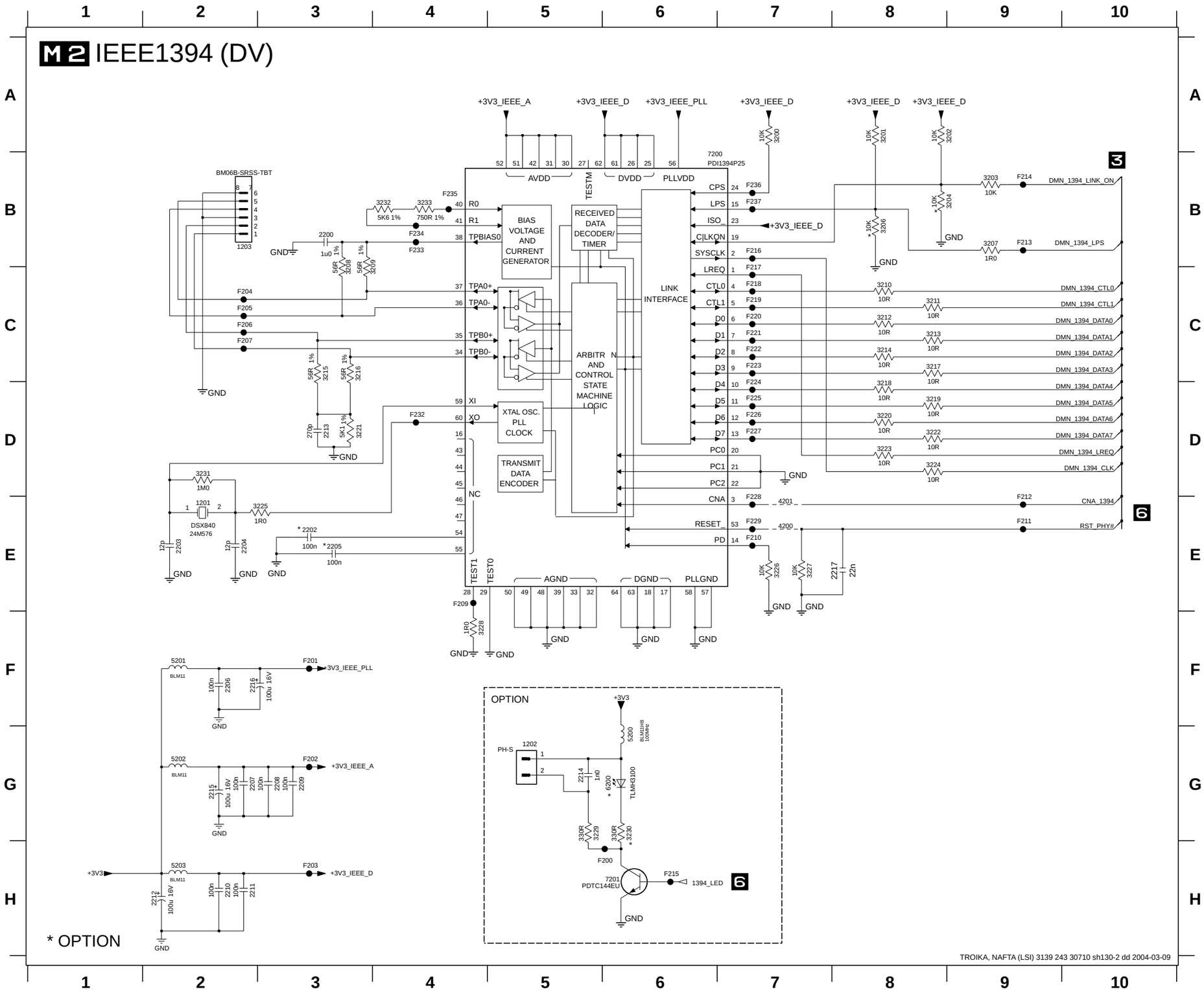


* OPTION

TROIKA, NAFTA (LSI) 3139 243 30710 sh130-1 dd 2004-03-09

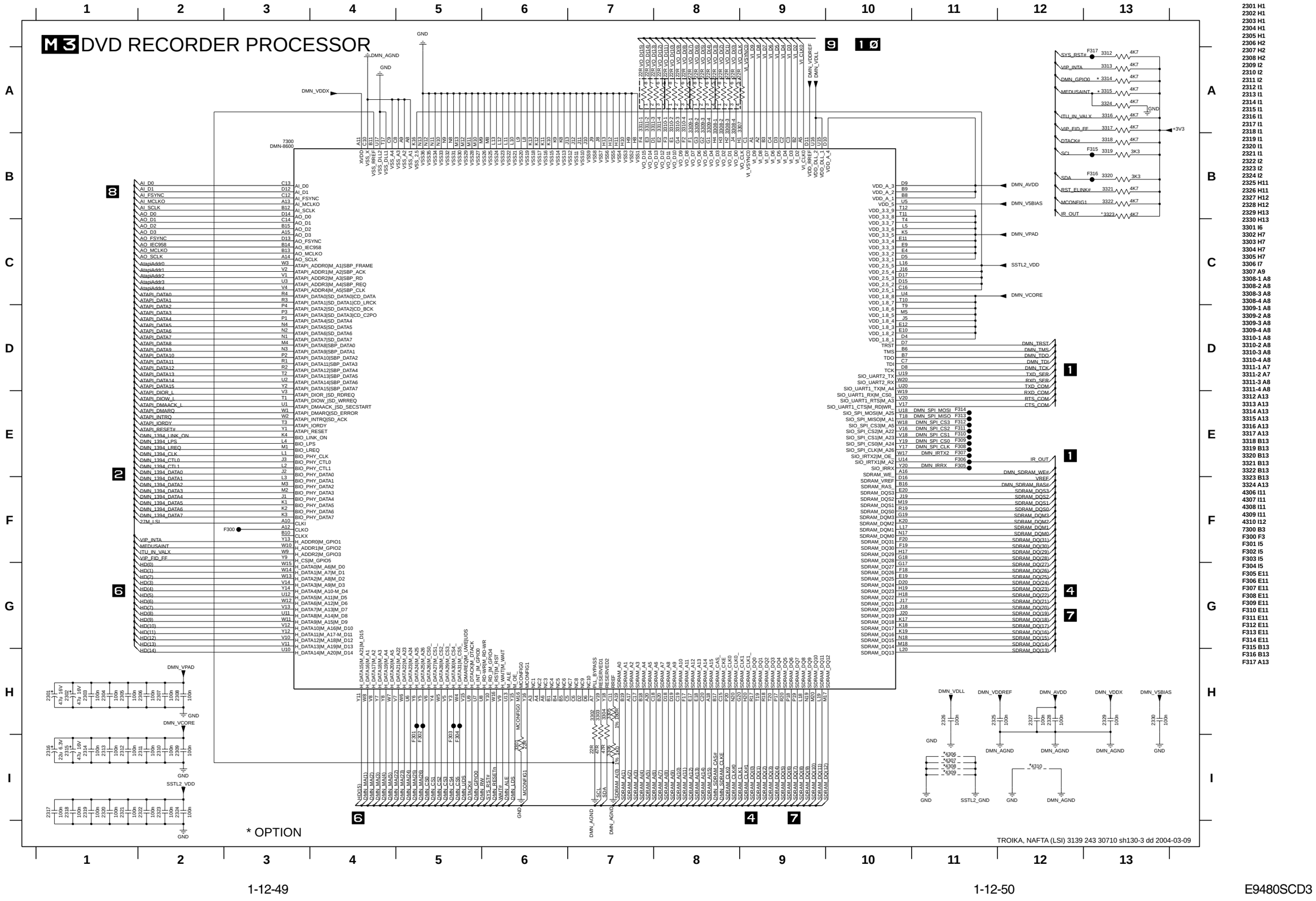
1101 E1
1103 D12
1108 B8
1109 B12
2114 A10
2116 F2
2117 G3
2118 G1
2119 C2
2120 C11
2121 D11
2122 G4
2123 H6
2124 A12
3127 A10
3128 A11
3130 G6
3132 F3
3133 G5
3134 A3
3135 G1
3136 B4
3137 B3
3138 B4
3139 H5
3140 C4
3141 C2
3142 D2
3143 D2
3144 C11
3145 H11
3146 D11
3147 B7
3148 B7
3149 B7
3150 B8
3151 C10
4101 B11
4102 H6
4103 A12
4104 A11
4105 A11
4106 B10
4107 A11
4108 B10
4109 C10
5103 A9
5104 E2
6103 F3
6104 F4
6105 G1
7100-1 G3
7100-2 F4
7100-3 G5
7100-4 G5
7127 A9
7130 F2
7134-A C4
7134-B B3
7135 C10
F110 B7
F111 B7
F112 B7
F113 B7
F114 C7
F115 C7
F116 C7
F118 B4
F119 B4
F120 B5
F121 C2
F123 D3
F130 B12
F131 B12
F132 B12
F133 B12
F134 B12
F135 B12
F136 C12
F137 C12
F138 C12
F139 G2
F141 F3
F143 G6
F144 H6
F145 E11
F146 D11
F147 D11
F148 H11
F149 H11
F265 D1
F930 E1
F931 C3
F932 D1
F933 D1
F934 D1
F935 D1

Digital Board Unit 2/10 Schematic Diagram < DVD Section >



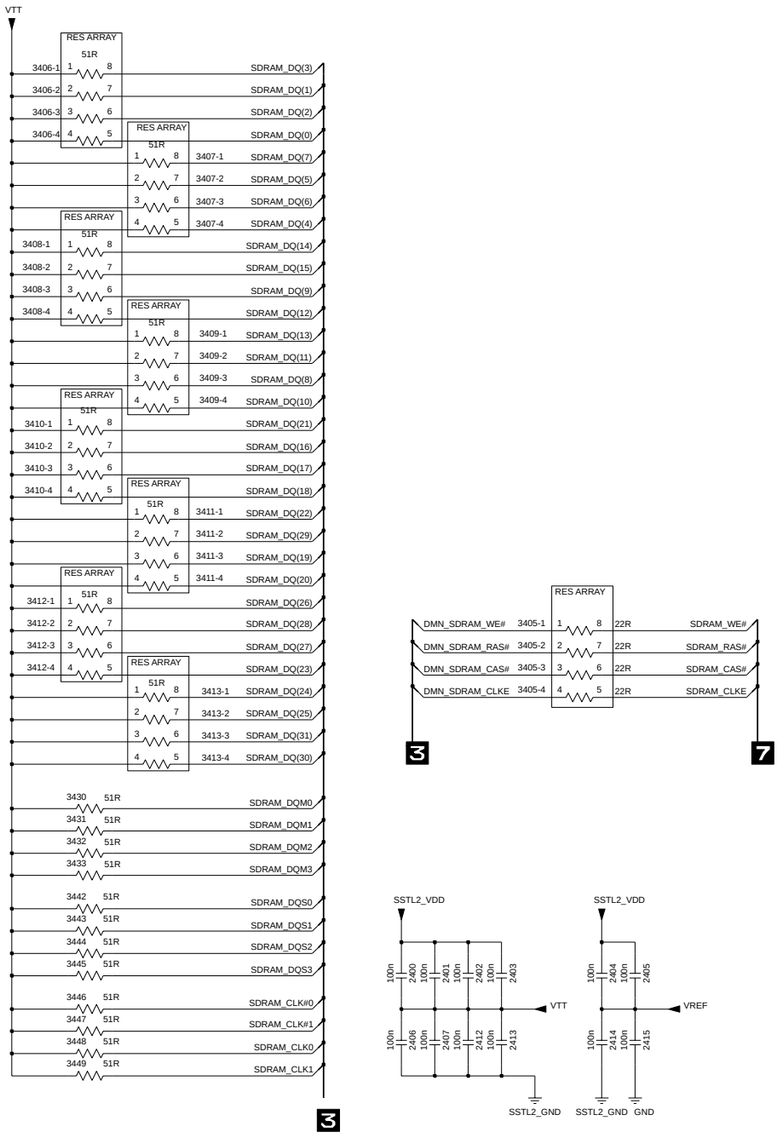
1201 E2
1202 G5
1203 B2
2200 B3
2202 E3
2203 E2
2204 E2
2205 E3
2206 F2
2207 G2
2208 G3
2209 G3
2210 H2
2211 H2
2212 H2
2213 D3
2214 G5
2215 G2
2216 F2
2217 E8
3200 A7
3201 A8
3202 A8
3203 B9
3204 B8
3206 B8
3207 B9
3208 B3
3209 B3
3210 C8
3211 C8
3212 C8
3213 C8
3214 C8
3215 C3
3216 C3
3217 C8
3218 D8
3219 D8
3220 D8
3221 D3
3222 D8
3223 D8
3224 D8
3225 E3
3226 E7
3227 E7
3228 F4
3229 G5
3230 G6
3231 D2
3232 B4
3233 B4
4200 E7
4201 E7
5200 G6
5201 F2
5202 G2
5203 H2
6200 G6
7200 B6
7201 H6
F200 H6
F201 F3
F202 G3
F203 H3
F204 C2
F205 C2
F206 C2
F207 C2
F209 E4
F210 E7
F211 E9
F212 E9
F213 B9
F214 B9
F215 H6
F216 B7
F217 C7
F218 C7
F219 C7
F220 C7
F221 C7
F222 C7
F223 C7
F224 D7
F225 D7
F226 D7
F227 D7
F228 E7
F229 E7
F232 D4
F233 B4
F234 B4
F235 B4
F236 B7
F237 B7

Digital Board Unit 3/10 Schematic Diagram < DVD Section >

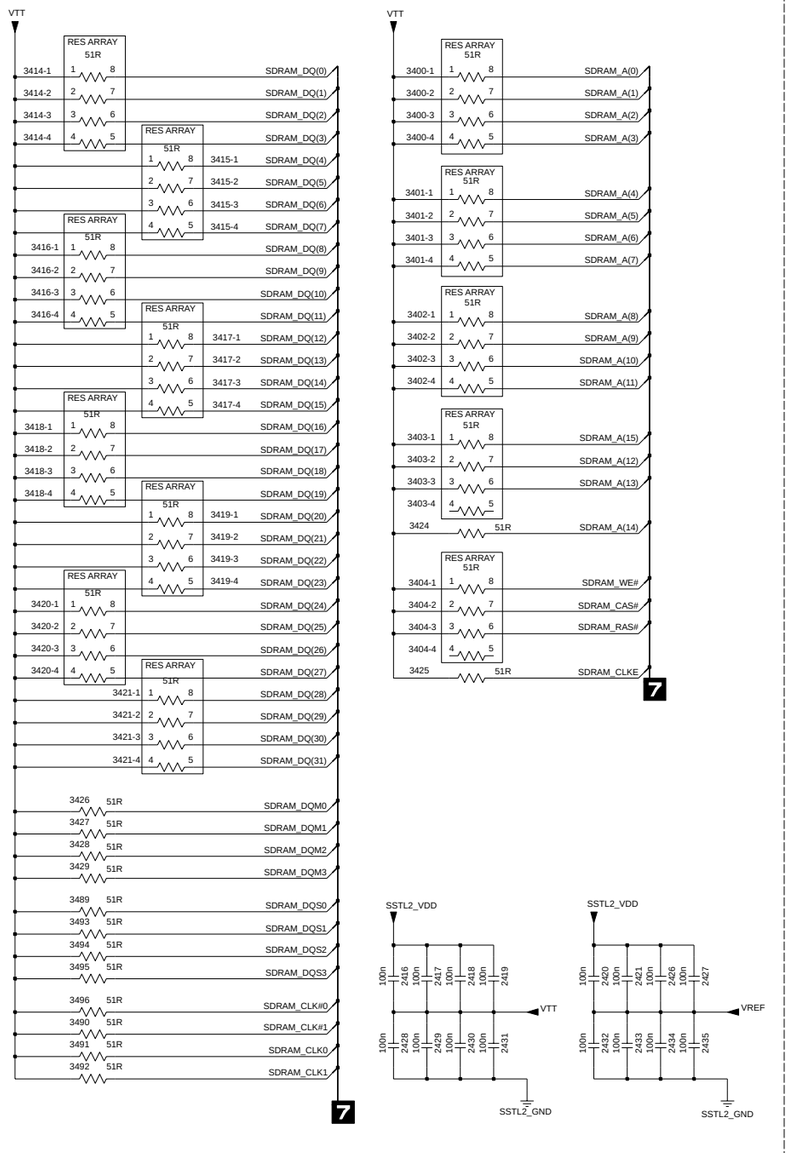


M4 TERMINATION AT DMN8600/DDR SDRAM

DMN8600



DDR SDRAM

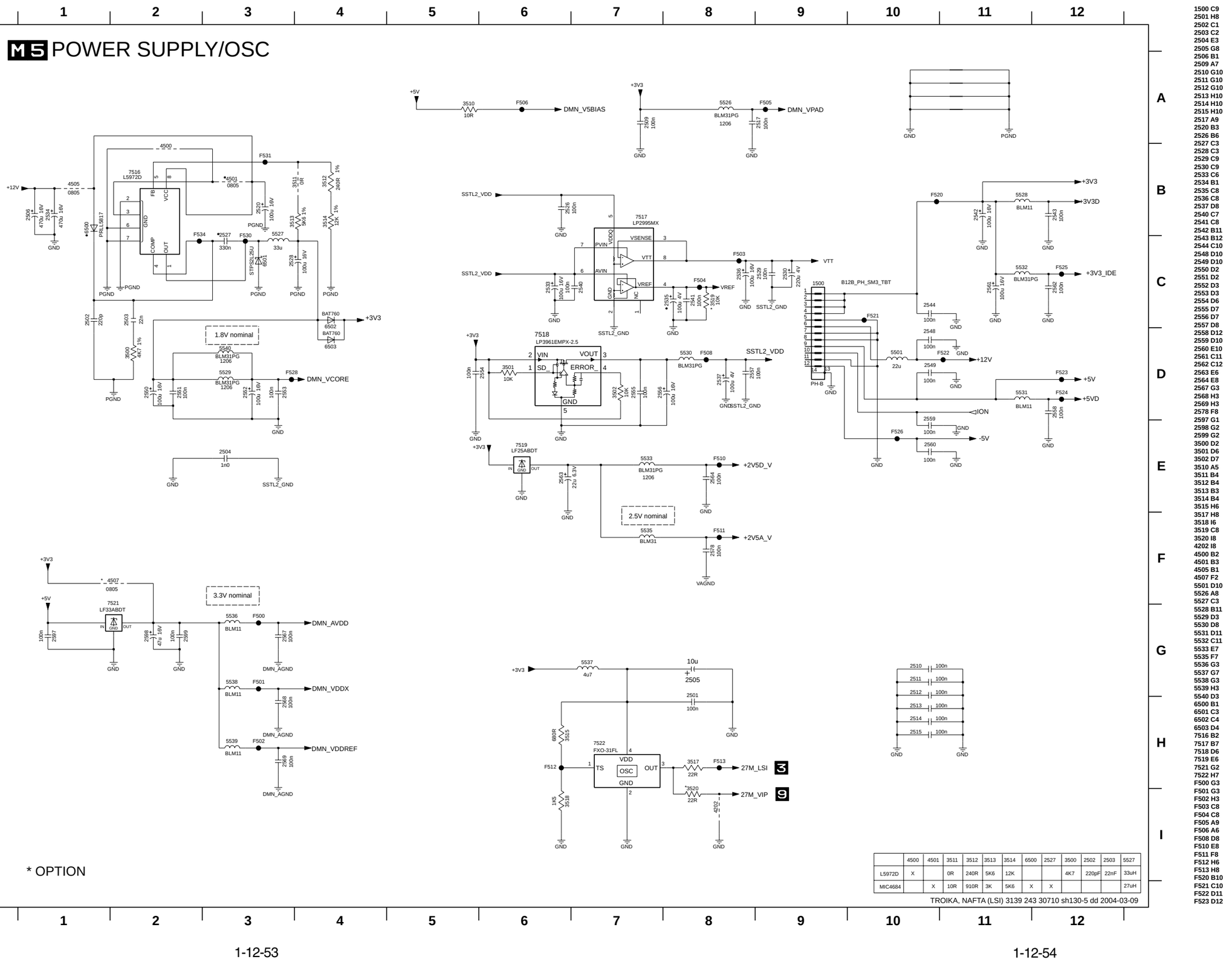


TROIKA, NAFTA (LSI) 3139 243 30710 sh130-4 dd 2004-03-09

2400 G4
2401 G5
2402 G5
2403 G5
2404 G6
2405 G6
2406 H4
2407 H5
2412 H5
2413 H5
2414 H6
2415 H6
2416 G11
2417 G11
2418 G11
2419 G12
2420 G12
2421 G12
2426 G13
2427 G13
2428 H11
2429 H11
2430 H11
2431 H12
2432 H12
2433 H12
2434 H13
2435 H13
3400-1 B11
3400-2 B11
3400-3 B11
3400-4 B11
3401-1 B11
3401-2 C11
3401-3 C11
3401-4 C11
3402-1 C11
3402-2 C11
3402-3 D11
3402-4 D11
3403-1 D11
3403-2 D11
3403-3 D11
3403-4 D11
3404-1 E11
3404-2 E11
3404-3 E11
3404-4 E11
3405-1 E5
3405-2 E5
3405-3 F5
3405-4 F5
3406-1 B2
3406-2 B2
3406-3 B2
3406-4 B2
3407-1 B3
3407-2 B3
3407-3 C3
3407-4 C3
3408-1 C2
3408-2 C2
3408-3 C2
3408-4 C2
3409-1 C3
3409-2 D3
3409-3 D3
3409-4 D3
3410-1 D2
3410-2 D2
3410-3 D2
3410-4 D2
3411-1 E3
3411-2 E3
3411-3 E3
3411-4 E3
3412-1 E2
3412-2 E2
3412-3 E2
3412-4 F2
3413-1 F3
3413-2 F3
3413-3 F3
3413-4 F3
3414-1 B9
3414-2 B9
3414-3 B9
3414-4 B9
3415-1 B10
3415-2 B10
3415-3 C10
3415-4 C10
3416-1 C9
3416-2 C9
3416-3 C9
3416-4 C9
3417-1 C10
3417-2 D10
3417-3 D10
3417-4 D10
3418-1 D9
3418-2 D9
3418-3 D9
3418-4 D9
3419-1 E10
3419-2 E10
3419-3 E10
3419-4 E10
3420-1 E9
3420-2 E9
3420-3 E9
3420-4 F9
3421-1 F9
3421-2 F9
3421-3 F9
3421-4 F9
3424 E11
3425 F11
3426 F9
3427 G9
3428 G9
3429 G9
3430 F2
3431 G2
3432 G2
3433 G2
3442 G2
3443 G2
3444 G2
3445 G2
3446 H2
3447 H2
3448 H2
3449 H2
3489 G9
3490 H9
3491 H9
3492 H9
3493 G9
3494 G9
3495 G9
3496 H9

Digital Board Unit 5/10 Schematic Diagram < DVD Section >

M5 POWER SUPPLY/OSC



* OPTION

	4500	4501	3511	3512	3513	3514	6500	2527	3500	2502	2503	5527
L5972D	X		0R	240R	5K6	12K			4K7	220pF	22nF	33uH
MIC4684		X	10R	910R	3K	5K6	X	X				27uH

TROIKA, NAFTA (LSI) 3139 243 30710 sh130-5 dd 2004-03-09

1500 C9 F524 D12
2501 H8 F525 C12
2502 C1 F526 E10
2503 C2 F528 D3
2504 E3 F530 C3
2505 G8 F531 B3
2506 B1 F534 C2
2509 A7
2510 G10
2511 G10
2512 G10
2513 H10
2514 H10
2515 H10
2517 A9
2520 B3
2526 B6
2527 C3
2528 C3
2529 C9
2530 C9
2533 C6
2534 B1
2535 C8
2536 C8
2537 D8
2540 C7
2541 C8
2542 B11
2543 B12
2544 C10
2548 D10
2549 D10
2550 D2
2551 D2
2552 D3
2553 D3
2554 D6
2555 D7
2556 D7
2557 D8
2558 D12
2559 D10
2560 E10
2561 C11
2562 C12
2563 E6
2564 E8
2567 G3
2568 H3
2569 H3
2578 F8
2597 G1
2598 G2
2599 G2
3500 D2
3501 D6
3502 D7
3510 A5
3511 B4
3512 B4
3513 B3
3514 B4
3515 H6
3517 H8
3518 I6
3519 C8
3520 I8
4202 I8
4500 B2
4501 B3
4505 B1
4507 F2
5501 D10
5526 A8
5527 C3
5528 B11
5529 D3
5530 D8
5531 D11
5532 C11
5533 E7
5535 F7
5536 G3
5537 G7
5538 G3
5539 H3
5540 D3
6500 B1
6501 C3
6502 C4
6503 D4
7516 B2
7517 B7
7518 D6
7519 E6
7521 G2
7522 H7
F500 G3
F501 G3
F502 H3
F503 C8
F504 C8
F505 A9
F506 A6
F508 D8
F510 E8
F511 F8
F512 H6
F513 H8
F520 B10
F521 C10
F522 D11
F523 D12

Digital Board Unit 6/10 Schematic Diagram < DVD Section >

M6 GPIOs /IDE

GPIOs

BASIC ENGINE INTERFACE

FOR SDRAM/BD DETECTION

IDE HD_AT(0:15)

*OPTION

DDR SUPPLIER	4606	4605
Hynix	X	X
Samsung	X	-
Micron	-	X
Reserved	-	-

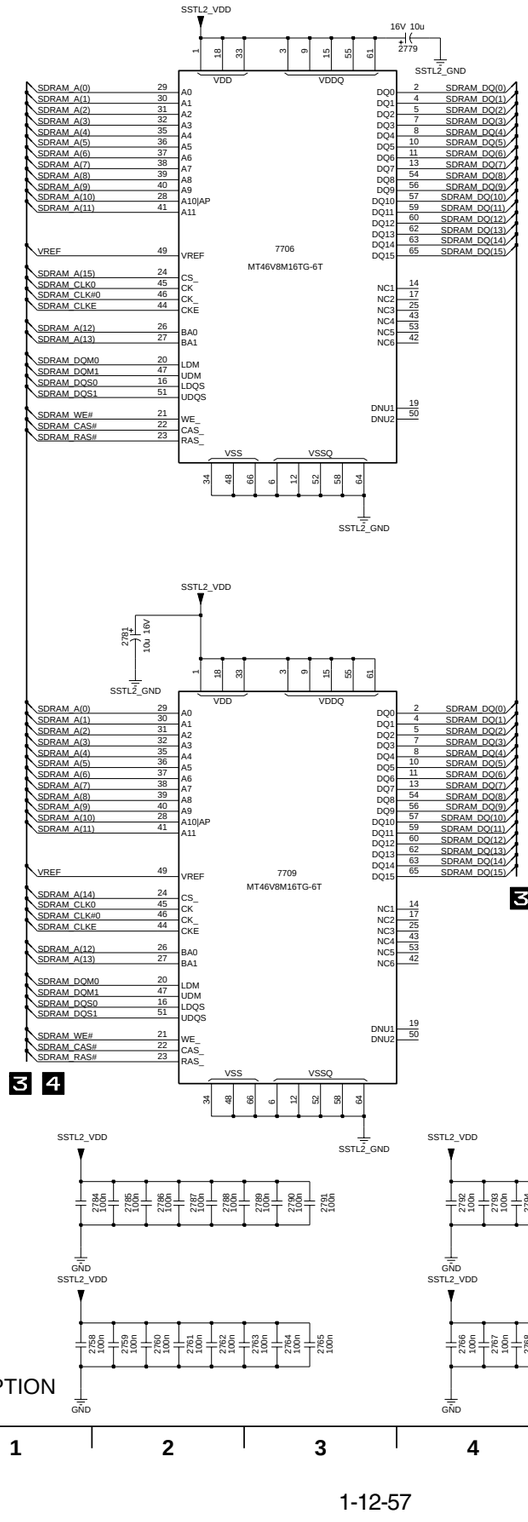
PCB VERSION	4604
NAFTA	X
EU	-

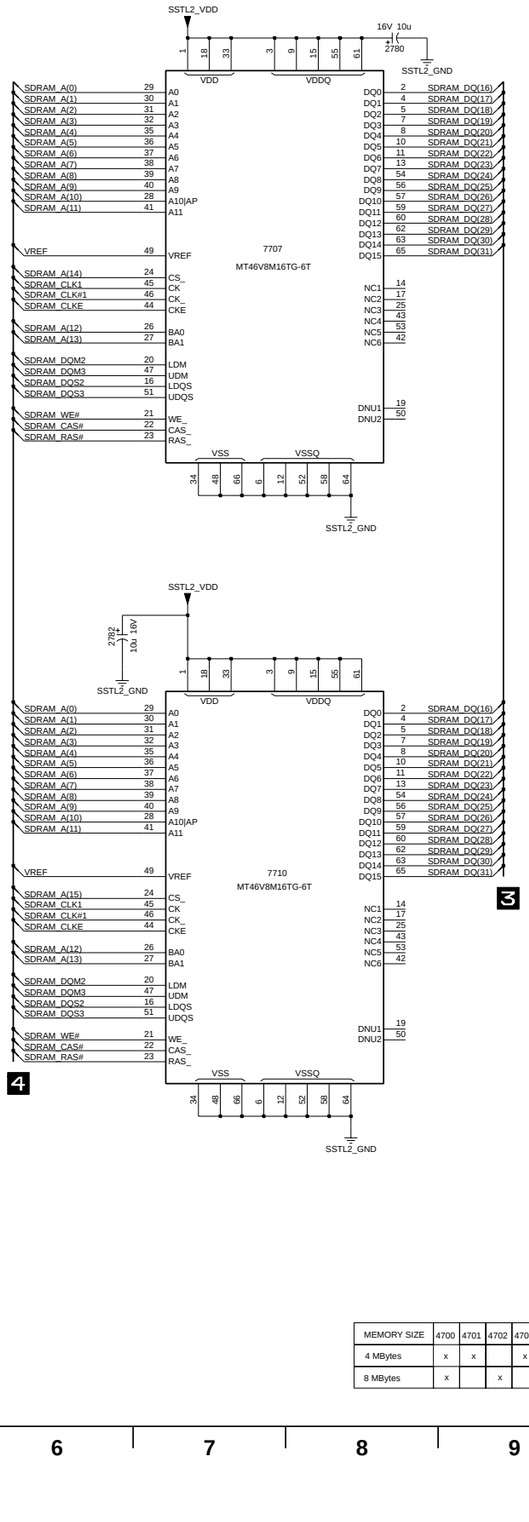
TROIKA, NAFTA (LSI) 3139 243 30710 sh130-6 dd 2004-03-09

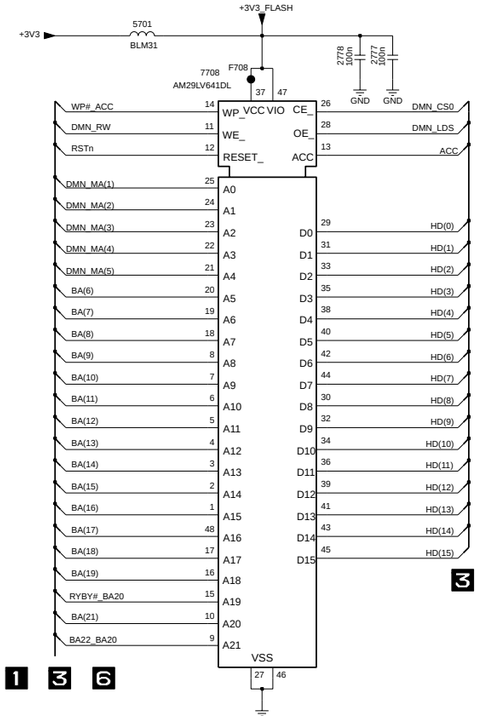
1102 F7
2601 A12
2602 A12
2603 A10
2604 A6
2605 B14
2606 B2
2607 C3
2610 G2
3600 A9
3601-1 C9
3601-2 C9
3601-3 C9
3601-4 C9
3602 A4
3603 C4
3605 F2
3607 G2
3610 F2
3611 G3
3612-1 E10
3612-2 E10
3612-3 F10
3612-4 F10
3613-1 E12
3613-2 E12
3613-3 F12
3613-4 F12
3614-1 F10
3614-2 F10
3614-3 G10
3614-4 G10
3615-1 F12
3615-2 F12
3615-3 G12
3615-4 G12
3616 H2
3617 H9
3618 H9
3619 H11
3620-1 H12
3620-2 I12
3620-3 I12
3620-4 I12
3621-1 I10
3621-2 I10
3621-3 I10
3621-4 I10
3622 H9
3623 H9
3624 G2
3625 H6
3626 E11
3627 A9
3628 C7
4600 B4
4601 D2
4602 A8
4603 B9
4604 C8
4605 C8
4606 C8
4608 H8
5600 B14
7600-1 A2
7600-2 A3
7600-3 B3
7600-4 C3
7601 B1
7602 A10
7603 A11
7608 A6
F600 A1
F601 B2
F602 A2
F603 A4
F604 B4
F605 C4
F606 A8
F607 B9
F608 B9
F609 B9
F610 B7
F620 I10
F621 H12
F622 H12
F623 I12
F624 I12
F625 I10
F626 I10
F627 H10
F628 H9
F629 H9
F630 F6
F631 F6
F632 F7
F633 F6
F634 F7
F635 F6
F636 F7
F637 F6
F638 F7
F639 F6
F640 F7
F641 G6
F642 G7
F643 G6
F644 G7
F645 G6
F646 G7
F648 H6
F650 B14
F651 B9

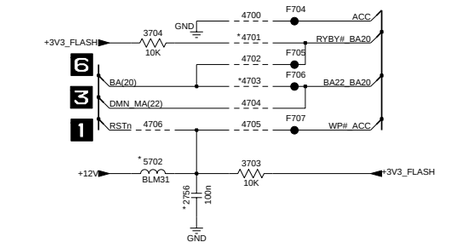
Digital Board Unit 7/10 Schematic Diagram < DVD Section >

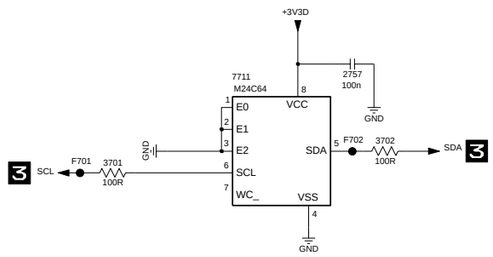
M7 MEMORY (SDRAM/FLASH)/EEPROM











MEMORY SIZE	4700	4701	4702	4703	4704	4705
4 MBytes	x	x		x		
8 MBytes	x		x		x	x

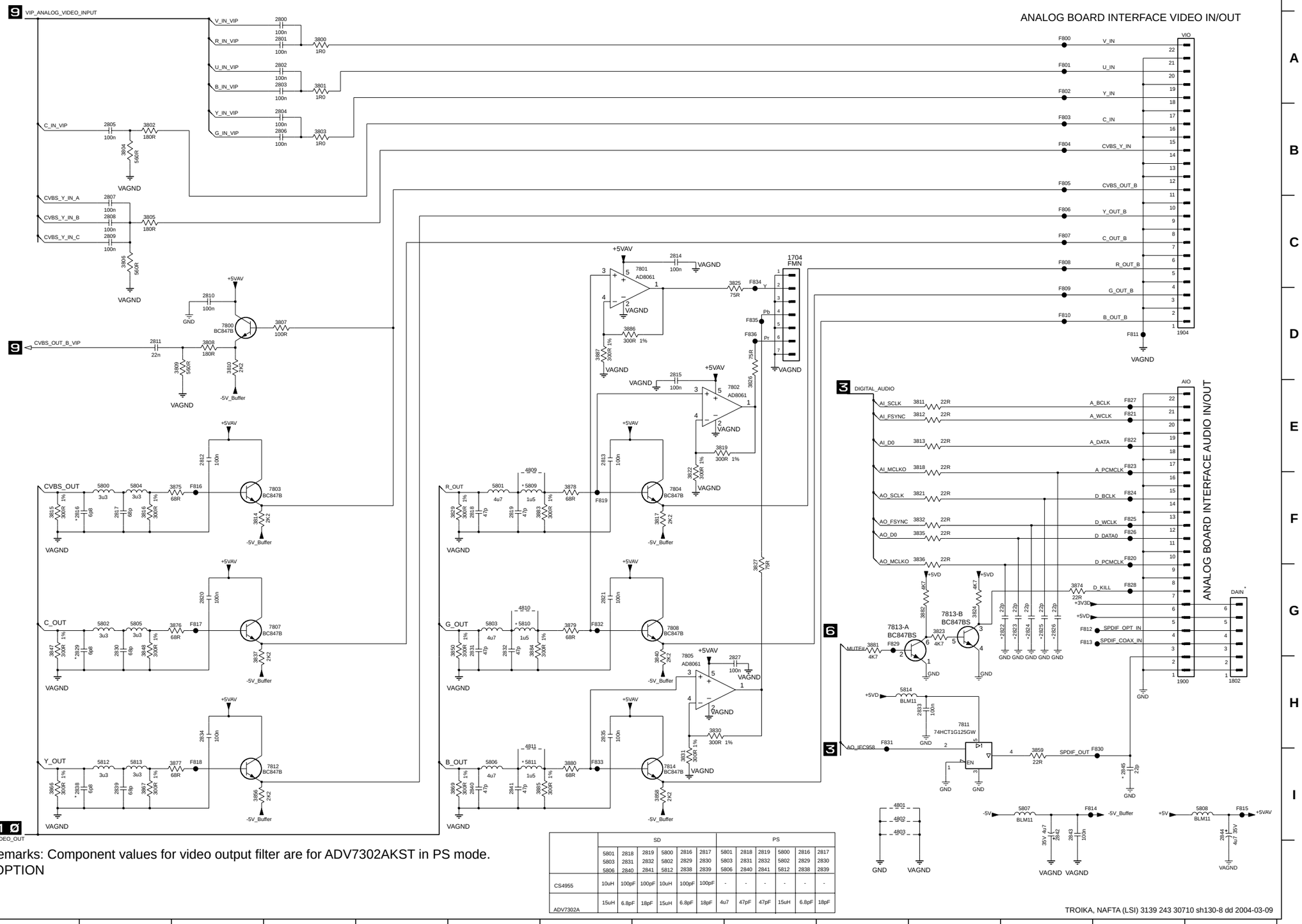
* OPTION

TROIKA, NAFTA (LSI) 3139 243 30710 sh130-7 dd 2004-03-09

2756 F11
2757 G12
2758 I1
2759 I2
2760 I2
2761 I2
2762 I2
2763 I3
2764 I3
2765 I3
2766 I4
2767 I4
2768 I4
2769 I5
2770 I5
2771 I5
2772 I5
2773 I5
2777 A12
2778 A12
2779 A4
2780 A8
2781 E2
2782 E6
2784 H1
2785 H2
2786 H2
2787 H2
2788 H2
2789 H3
2790 H3
2791 H3
2792 H4
2793 H4
2794 H4
2795 H5
2796 H5
2797 H5
2798 H5
2799 H5
3701 H11
3702 H12
3703 F12
3704 E11
4700 E12
4701 E12
4702 F12
4703 F12
4704 F12
4705 F12
4706 F11
5701 A11
5702 F11
7706 B3
7707 B7
7708 A11
7709 F3
7710 F8
7711 G11
F701 H10
F702 H12
F704 E12
F705 F12
F706 F12
F707 F12
F708 A12

Digital Board Unit 8/10 Schematic Diagram < DVD Section >

M8 AUDIO/VIDEO INPUT/OUTPUT



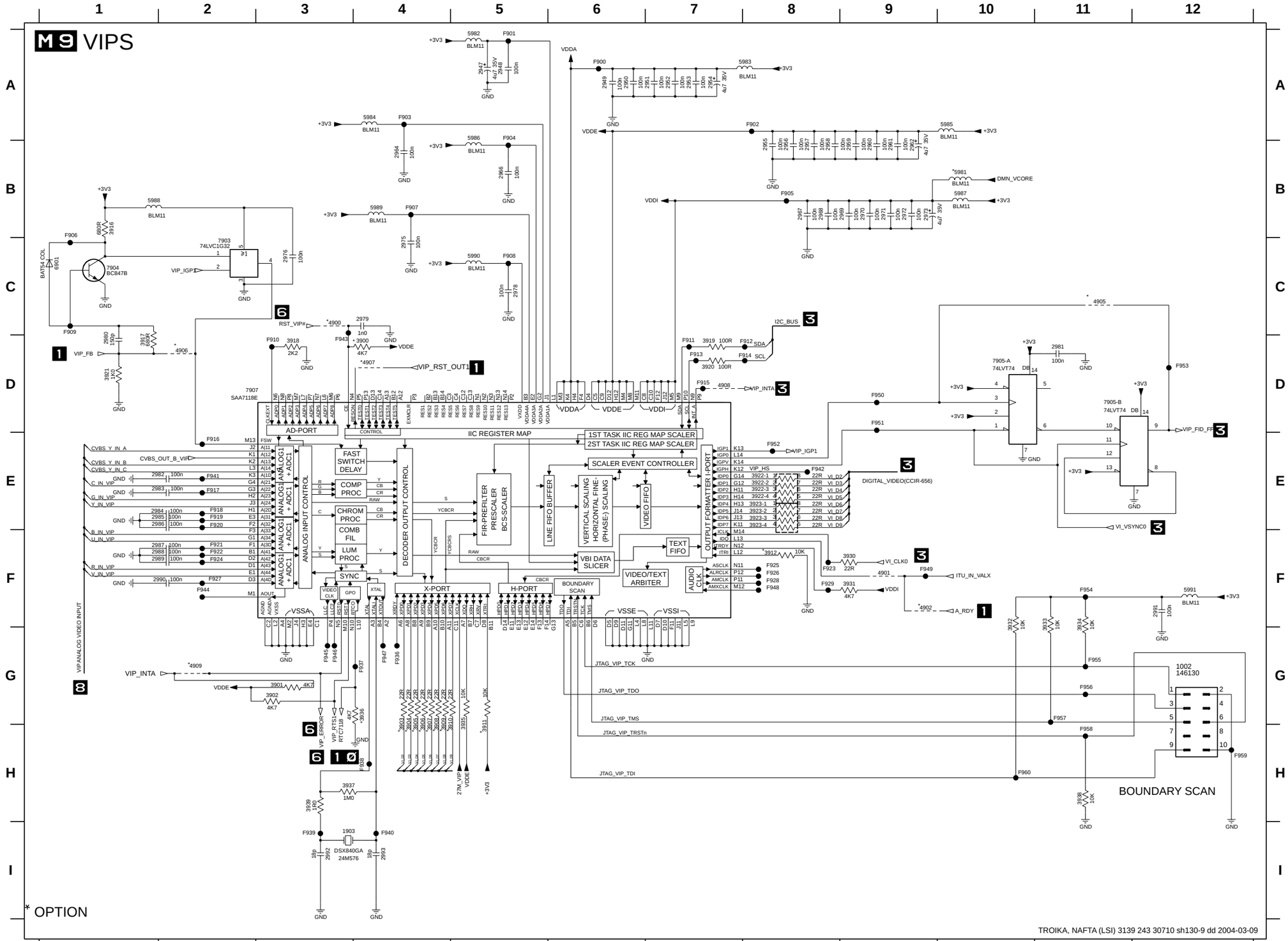
Remarks: Component values for video output filter are for ADV7302AKST in PS mode.
*OPTION

	SD						PS					
	5801 5803 5806	2818 2831 2840	2819 2832 2841	5800 5802 5812	2816 2829 2838	2817 2830 2839	5801 5803 5806	2818 2831 2840	2819 2832 2841	5800 5802 5812	2816 2829 2838	2817 2830 2839
CS4955	10uH	100pF	100pF	10uH	100pF	100pF	-	-	-	-	-	-
ADV7302A	15uH	6.8pF	18pF	15uH	6.8pF	18pF	4u7	47pF	47pF	15uH	6.8pF	18pF

TROIKA, NAFTA (LSI) 3139 243 30710 sh130-8 dd 2004-03-09

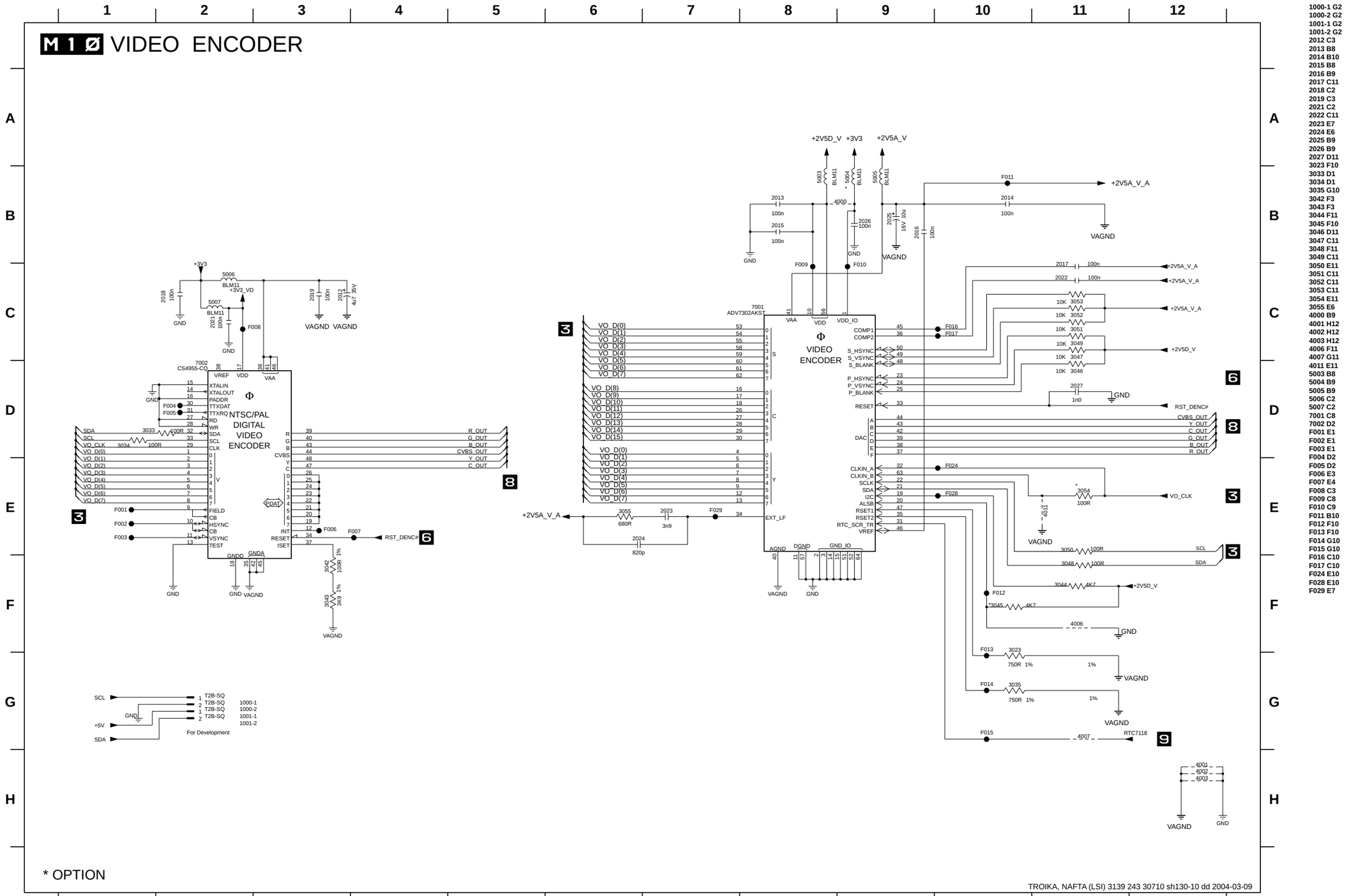
1704 C9 1802 H14 1900 H13 1904 D13 2800 A4 2801 A4 2802 A4 2803 A4 2804 B4 2805 B2 2806 B4 2807 C2 2808 C2 2809 C2 2810 D3 2811 D2 2812 E3 2813 E7 2814 C8 2815 D8 2816 F1 2817 F2 2818 F6 2819 F6 2820 G3 2821 G7 2822 G12 2823 G12 2824 G12 2825 G12 2826 G12 2827 H9 2829 G1 2830 G2 2831 G6 2832 G6 2833 H11 2834 H3 2835 H7 2838 I1 2839 I2 2840 I6 2841 I6 2842 I12 2843 I12 2844 I14 2845 I13 3800 A4 3801 A4 3802 B2 3803 B4 3804 B2 3805 C2 3806 C2 3807 D4 3808 D3 3809 D3 3810 D3 3811 E11 3812 E11 3813 E11 3814 F3 3815 F1 3816 F2 3817 F8 3818 E11 3819 E8 3821 F11 3822 F8 3823 G11 3824 G11 3825 C9 3826 E9 3827 G9 3829 F6 3830 H8 3831 I8 3832 F11 3835 F11 3836 F11 3837 H3 3840 H8 3847 G1 3848 G2 3850 G6 3856 I3 3858 I8 3859 I12 3866 I1 3867 I2 3869 I6 3874 G12 3875 F3 3876 G3 3877 I3 3878 F7 3879 G7 3880 I7 3881 G10 3882 G11 3883 F7 3884 G6 3885 I7 3886 D7 3887 D7 4801 I10 4802 I10 4803 I10 4809 E6 4810 G6 4811 H6 5800 F2 5801 F6 5802 G2 5803 G6 5804 F2 5805 G2 5806 I6 5807 I12 5808 I14 5809 F6 5810 G6 5811 I6 5812 I2 5813 I2 5814 H10 7800 D3 7801 C8 7802 E9 7803 F4 7804 F8 7805 H8 7807 G4 7808 G8 7811 H11 7812 I4 7813-A G10 7813-B G11 7814 I8 F800 A12 F801 A12 F802 A12 F803 B12 F804 B12 F805 B12 F806 C12 F807 C12 F808 C12 F809 D12 F810 D12 F811 D13 F812 G12 F813 G12 F814 I12 F815 I14 F816 F3 F817 G3 F818 I3 F819 F7 F820 F13 F821 E13 F822 E13 F823 E13 F824 F13 F825 F13 F826 F13 F827 E13 F828 G13 F829 G10 F830 I13 F831 H10 F832 G7 F833 I7 F834 C9 F835 D9 F836 D9

Digital Board Unit 9/10 Schematic Diagram < DVD Section >



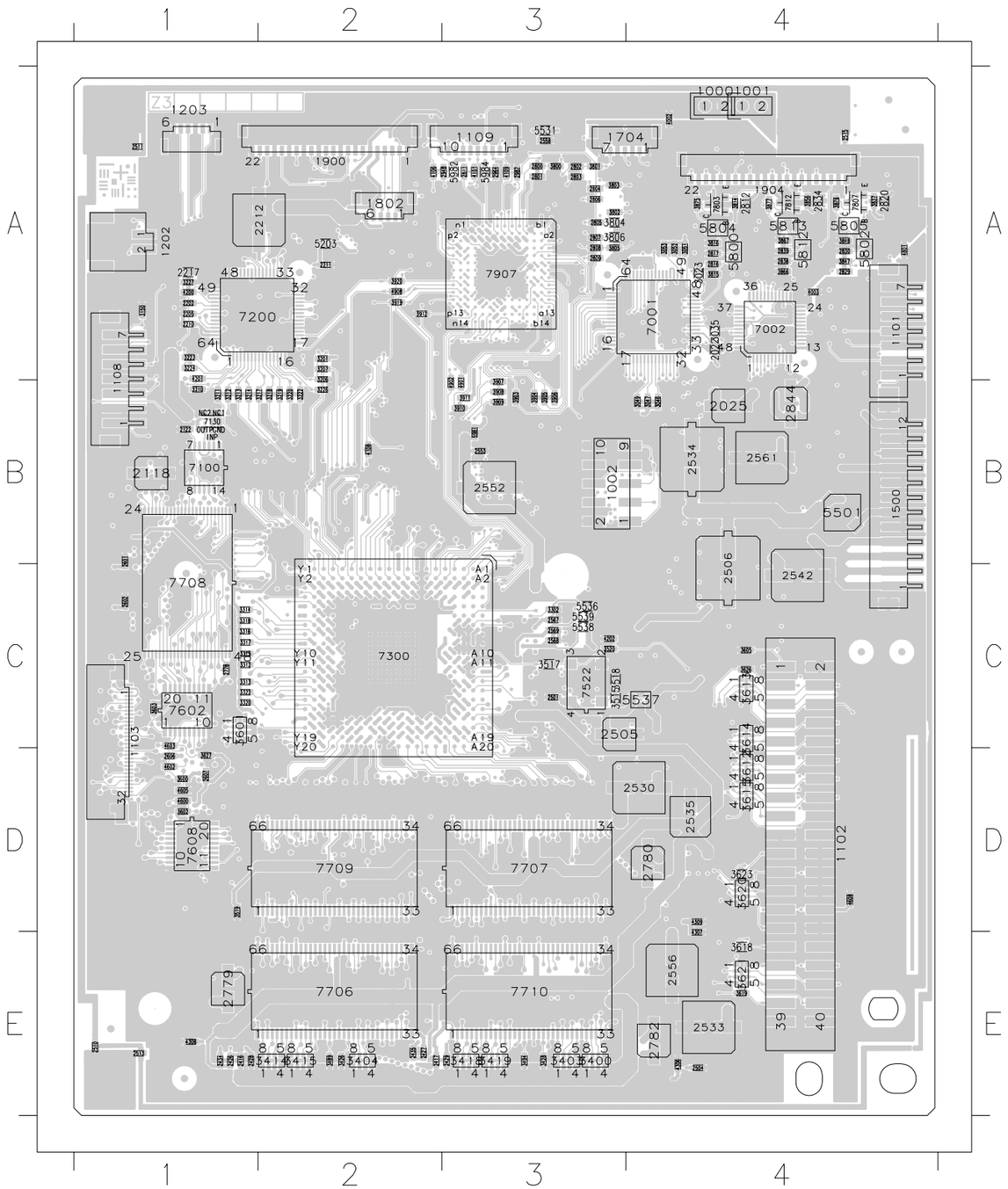
1002 G12
1903 I3
2947 A5
2948 A5
2949 A6
2950 A6
2951 A6
2952 A7
2953 A7
2954 A7
2955 B8
2956 B8
2957 B8
2958 B8
2959 B9
2960 B9
2961 B9
2962 B9
2964 B4
2966 B5
2967 B8
2968 B8
2969 B8
2970 B9
2971 B9
2972 B9
2973 B9
2975 C4
2976 C3
2978 C5
2979 C4
2980 D1
2981 D11
2982 E1
2983 E1
2984 E1
2985 E1
2986 E1
2987 F1
2988 F1
2989 F1
2990 F2
2991 F12
2992 I3
2993 I4
3900 D4
3901 G3
3902 G3
3903 G4
3904 G4
3905 G4
3906 G4
3907 G4
3908 G4
3909 G4
3910 G5
3911 H5
3912 F8
3916 B1
3917 D1
3918 D3
3919 D7
3920 D7
3921 D1
3922-1 E8
3922-2 E8
3922-3 E8
3922-4 E8
3923-1 E8
3923-2 E8
3923-3 E8
3923-4 E8
3930 F9
3931 F9
3932 F10
3933 F11
3934 F11
3935 G5
3936 G4
3937 H3
3938 H11
3939 H3
4900 C3
4901 F9
4902 F9
4905 C11
4906 D2
4907 D4
4908 D7
4909 G2
5981 B10
5982 A5
5983 A8
5984 A4
5985 A10
5986 A5
5987 B10
5988 B1
5989 B4
5990 C5
5991 F12
6901 C1
7903 C2
7904 C1
7905-A D10
7905-B D11
7907 D3
F900 A6
F901 A5
F902 A8
F903 A4
F904 A5
F905 B8
F906 B1
F907 B4
F908 C5
F909 C1
F910 D3
F911 D7
F912 D8
F913 D7
F914 D8
F915 D7
F916 E2
F917 E2
F918 E2
F919 E2
F920 E2
F921 F2
F922 F2
F923 F8
F924 F2
F925 F8
F926 F8
F927 F2
F928 F8
F929 F8
F936 G4
F937 G4
F938 H4
F939 I3
F940 I4
F941 E2
F942 E8
F943 D3
F944 F2
F945 G3
F946 G3
F947 G4
F948 F8
F949 F9
F950 D9
F951 D9
F952 E8
F953 D12
F954 F11
F955 G11
F956 G11
F957 G11
F958 H11
F959 H12
F960 H10

Digital Board Unit 10/10 Schematic Diagram < DVD Section >



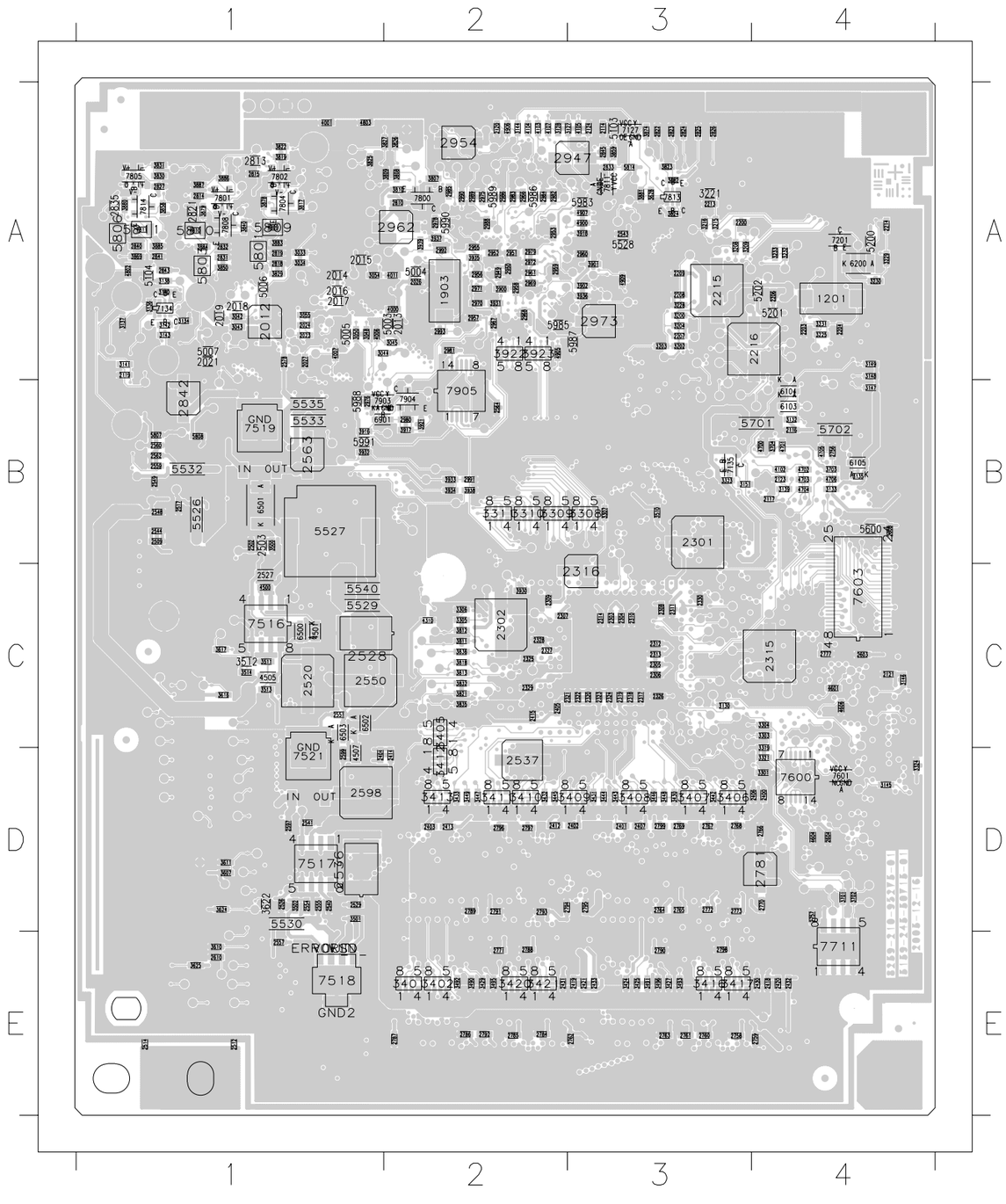
1000-1 G2
1000-2 G2
1001-1 G2
1001-2 G2
2012 C3
2013 B8
2014 B10
2015 B8
2016 B9
2017 C11
2018 C2
2019 C3
2021 C2
2022 C11
2023 E7
2024 E6
2025 B9
2026 B9
2027 D11
3023 F10
3033 D1
3034 D1
3035 G10
3042 F3
3043 F3
3044 F11
3045 F10
3046 D11
3047 C11
3048 F11
3049 C11
3050 E11
3051 C11
3052 C11
3053 C11
3054 E11
3055 E6
4000 B9
4001 H12
4002 H12
4003 H12
4006 F11
4007 G11
4011 E11
5003 B8
5004 B9
5005 B9
5006 C2
5007 C2
7001 C8
7002 D2
F001 E1
F002 E1
F003 E1
F004 D2
F005 D2
F006 E3
F007 E4
F008 C3
F009 C8
F010 C9
F011 B10
F012 F10
F013 F10
F014 G10
F015 G10
F016 C10
F017 C10
F024 E10
F028 E10
F029 E7

Digital Board Unit Top View < DVD Section >



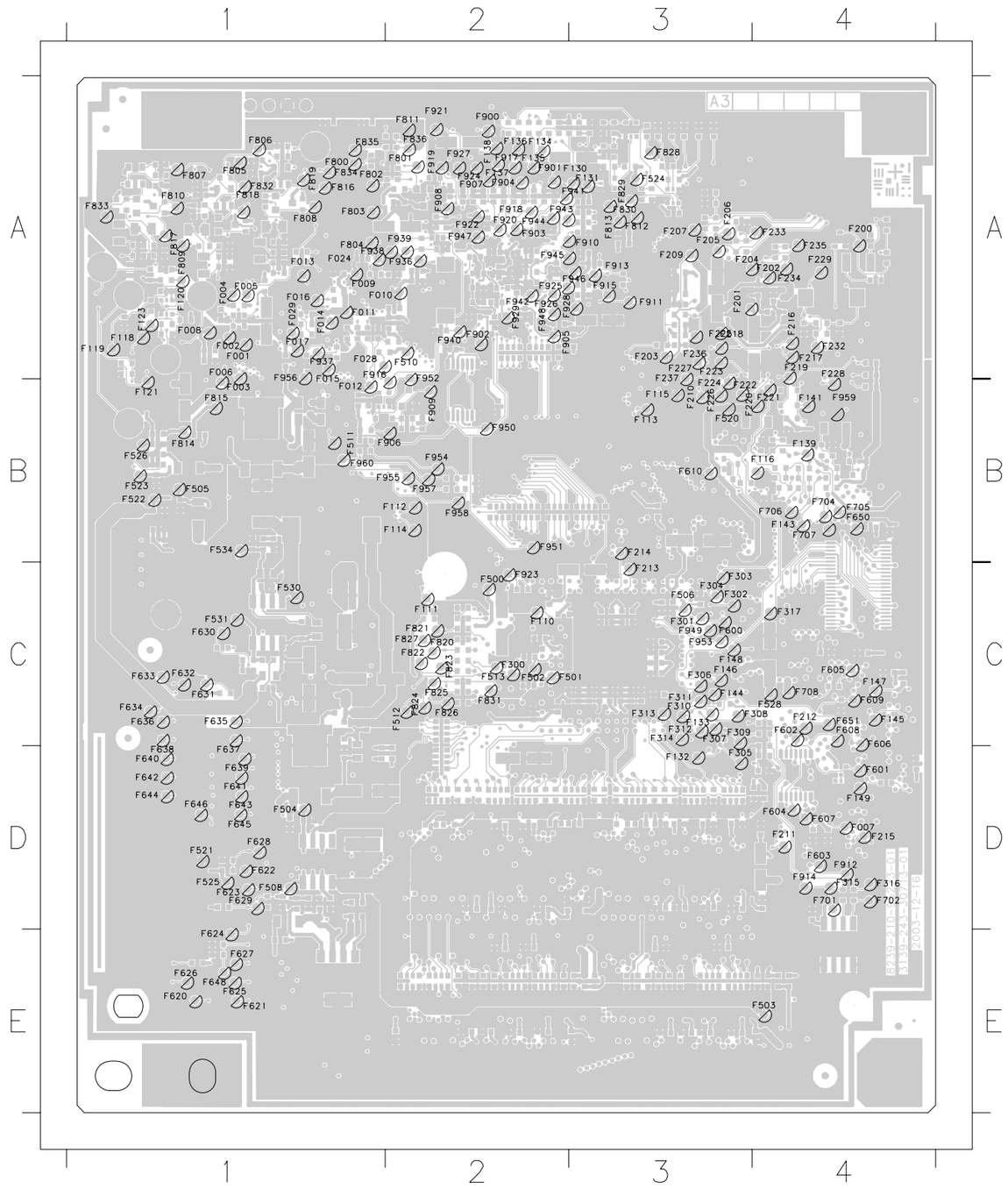
1000	A4	3023	A4	3877	A4
1001	A4	3035	A4	3903	B3
1002	B3	3046	B4	3904	B3
1101	A4	3047	B4	3905	B3
1102	D4	3049	B4	3906	B3
1103	C1	3051	A4	3907	B3
1108	A1	3052	A4	3908	B3
1109	A3	3053	A4	3909	B3
1202	A1	3150	A1	3910	B3
1203	A1	3201	A2	3911	B3
1500	B4	3206	A2	3912	A2
1704	A3	3207	A2	3919	A2
1802	A2	3210	B1	3920	A2
1900	A2	3211	B1	4002	A4
1904	A4	3212	B1	4003	A4
2022	A4	3213	B1	4101	A3
2025	B4	3214	B1	4106	A2
2118	B1	3217	B2	4108	B2
2122	B1	3218	B2	4109	A3
2202	A1	3219	B2	4200	A1
2205	A1	3220	B2	4201	A1
2210	A1	3222	B2	4202	C3
2211	A2	3223	A1	4306	E4
2212	A2	3224	A1	4307	E4
2217	A1	3226	B2	4308	E1
2416	E1	3227	A1	4309	D4
2417	E2	3302	C3	4600	D1
2426	E1	3312	C1	4602	D1
2427	E2	3313	C1	4603	C1
2428	E1	3314	C1	4605	D1
2429	E3	3315	C1	4608	D4
2434	E1	3316	C1	4801	A4
2435	E2	3317	C1	4901	B3
2501	C3	3318	C1	4902	B3
2504	E4	3320	C1	4908	A2
2505	C3	3322	C1	5203	A2
2506	C4	3400	E3	5501	B4
2510	E1	3403	E3	5531	A3
2511	A1	3404	E2	5536	C3
2513	E1	3414	E2	5537	C4
2515	A4	3415	E2	5538	C3
2530	D4	3418	E3	5539	C3
2533	E4	3419	E3	5800	A4
2534	B4	3426	E2	5802	A4
2535	D4	3428	E3	5804	A4
2542	C4	3489	E2	5805	A4
2552	B3	3494	E3	5812	A4
2553	B3	3515	C3	5813	A4
2556	E4	3517	C3	5981	B3
2558	A3	3518	C3	5982	A3
2561	B4	3519	D1	5984	A3
2567	C3	3520	C3	7001	A4
2568	C3	3600	D1	7002	A4
2569	C3	3601	C1	7100	B1
2601	B1	3602	D1	7130	B1
2602	C1	3603	C1	7200	A1
2606	D1	3605	C4	7300	C2
2607	D1	3612	D4	7522	C3
2778	C1	3613	C4	7602	C1
2779	E1	3614	C4	7608	D1
2780	D4	3615	D4	7706	E2
2782	E4	3618	E4	7707	D3
2800	A3	3619	E4	7708	C1
2801	A3	3620	D4	7709	D2
2802	A3	3621	E4	7710	E3
2803	A3	3623	D4	7803	A4
2804	A3	3626	C4	7807	A4
2805	A3	3627	D1	7812	A4
2806	A3	3800	A3	7907	A3
2807	A3	3801	A3		
2808	A3	3802	A3		
2809	A3	3803	A3		
2811	A3	3804	A3		
2812	A4	3805	A3		
2816	A4	3806	A3		
2817	A4	3814	A4		
2820	A4	3815	A4		
2829	A4	3816	A4		
2830	A4	3837	A4		
2834	A4	3847	A4		
2838	A4	3848	A4		
2839	A4	3856	A4		
2844	B4	3866	A4		
2948	A3	3867	A4		
2964	A3	3875	A4		
2987	A3	3876	A4		

Digital Board Unit Bottom View < DVD Section >



1201	A4	2509	B1	2833	A3	3216	A3	3812	C2	4907	A3
1903	A2	2512	E1	2835	A1	3221	A3	3813	C2	4909	A3
2012	A1	2514	E1	2840	A1	3225	A4	3817	A1	5003	A2
2013	A2	2517	B1	2841	A1	3228	A3	3818	C2	5004	A2
2014	A1	2520	C1	2842	B1	3229	A4	3819	A1	5005	A1
2015	A1	2526	D1	2843	A1	3230	A4	3821	C2	5006	A1
2016	A1	2527	C1	2845	A3	3231	A4	3822	A1	5007	A1
2017	A1	2528	C1	2947	A3	3232	A4	3823	A3	5103	A3
2018	A1	2529	D1	2949	A2	3233	A4	3824	A3	5104	A1
2019	A1	2536	D1	2950	A2	3301	D4	3825	A1	5200	A4
2021	A1	2537	D2	2951	A2	3303	C4	3826	A2	5201	A4
2023	A1	2540	D1	2952	A2	3304	C4	3827	A2	5202	A4
2024	A1	2541	D1	2953	A2	3305	C2	3829	A1	5526	B1
2026	A2	2543	A3	2954	A2	3306	C2	3830	A1	5527	B1
2027	A1	2544	B1	2955	A2	3307	B3	3831	A1	5528	A3
2114	A3	2548	B1	2956	A2	3308	B3	3832	C2	5529	C1
2116	B4	2549	B1	2957	A2	3309	B2	3835	C2	5530	D1
2117	B4	2550	C1	2958	A2	3310	B2	3836	C2	5532	B1
2119	A1	2551	C1	2959	A2	3311	B2	3840	A1	5533	B1
2120	A2	2554	D1	2960	A3	3319	D4	3850	A1	5535	B1
2121	C4	2555	D1	2961	A2	3321	D4	3858	A1	5540	C1
2123	B4	2557	E1	2962	A2	3323	B3	3859	A3	5600	B4
2124	A3	2559	B1	2966	A2	3324	D4	3869	A1	5701	B4
2200	A3	2560	B1	2967	A2	3401	E2	3874	A3	5702	B4
2203	A4	2562	B1	2968	A2	3402	E2	3878	A1	5801	A1
2204	A4	2563	B1	2969	A2	3405	C2	3879	A1	5803	A1
2206	A4	2564	B2	2970	A2	3406	D3	3880	A1	5806	A1
2207	A3	2578	A1	2971	A2	3407	D3	3881	A3	5807	B1
2208	A3	2597	D1	2972	A2	3408	D3	3882	A3	5808	B1
2209	A3	2598	D1	2973	A3	3409	D3	3883	A1	5809	A1
2213	A3	2599	D1	2975	A2	3410	D2	3884	A1	5810	A1
2214	A4	2603	C4	2976	B1	3411	D2	3885	A1	5811	A1
2215	A3	2604	D4	2978	A2	3412	D2	3886	A1	5814	A3
2216	A4	2605	B4	2979	A2	3413	D2	3887	A1	5983	A3
2301	B3	2610	E1	2980	B2	3416	E3	3900	A2	5985	A2
2302	C2	2756	B4	2981	A2	3417	E3	3901	A3	5986	A2
2303	C3	2757	D4	2982	A2	3420	E3	3902	A3	5987	A3
2304	C3	2758	E3	2983	A2	3421	E2	3916	B1	5988	B1
2305	C3	2759	E4	2984	A2	3424	E3	3917	B2	5989	A2
2306	C3	2760	E3	2985	A2	3425	E3	3918	A3	5990	A2
2307	C2	2761	E3	2986	A2	3427	E3	3921	B2	5991	B1
2308	C3	2762	E3	2988	A2	3429	E2	3922	A2	6103	B4
2309	C2	2763	E3	2989	A2	3430	D3	3923	A2	6104	B4
2310	C3	2764	D3	2990	A2	3431	D3	3930	C2	6105	B4
2311	C3	2765	D3	2991	B2	3432	D2	3931	A2	6200	A4
2312	C3	2766	D4	2992	A2	3433	D2	3932	B1	6500	C1
2313	C3	2767	D3	2993	A2	3442	D3	3933	B2	6501	B1
2314	C3	2768	D3	3033	A1	3443	D3	3934	B2	6502	C1
2315	C4	2769	D3	3034	A1	3444	D3	3935	A2	6503	C1
2316	C3	2770	D4	3042	A1	3445	D2	3936	A3	6901	B1
2317	C3	2771	E2	3043	A1	3446	D3	3937	A2	7127	A3
2318	C3	2772	D3	3044	A1	3447	D2	3938	B2	7134	A1
2319	C3	2773	D3	3045	A2	3448	D3	3939	A2	7135	B3
2320	C3	2777	C4	3048	A1	3449	D2	4000	A2	7201	A4
2321	C2	2781	D4	3050	A1	3490	E2	4001	A1	7516	C1
2322	C3	2784	E2	3054	A1	3491	E3	4006	A1	7517	D1
2323	C3	2785	E2	3055	A1	3492	E2	4007	A1	7518	E1
2324	C3	2786	E2	3127	A3	3493	E3	4011	A2	7519	B1
2325	C2	2787	E2	3128	A2	3495	E2	4102	B4	7521	D1
2326	C3	2788	E2	3130	C3	3496	E3	4103	A2	7600	D4
2327	C2	2789	D2	3132	B4	3500	B1	4104	A2	7601	D4
2328	C2	2790	E3	3133	B4	3501	D1	4105	A3	7603	C4
2329	C2	2791	D2	3134	A1	3502	D1	4107	A2	7711	E4
2330	C3	2792	E2	3135	B4	3510	B3	4310	C2	7800	A2
2400	D4	2793	D2	3136	A1	3511	C1	4500	C1	7801	A1
2401	D3	2794	D2	3137	A1	3512	C1	4501	C1	7802	A1
2402	D3	2795	D3	3138	A1	3513	C1	4505	C1	7804	A1
2403	D2	2796	D2	3139	B4	3514	C1	4507	D1	7805	A1
2404	D1	2797	D2	3140	A1	3607	D1	4601	C4	7808	A1
2405	C2	2798	E3	3141	A1	3610	E1	4604	D4	7811	A3
2406	D4	2799	D3	3142	A1	3611	D1	4606	C4	7813	A3
2407	D3	2810	A2	3143	A1	3616	C1	4700	B4	7814	A1
2412	D2	2813	A1	3144	A2	3617	C1	4701	B4	7903	B1
2413	D2	2814	A1	3145	D4	3622	D1	4702	B4	7904	B2
2414	D2	2815	A1	3146	C4	3624	D1	4703	B4	7905	B2
2415	C2	2818	A1	3147	B4	3625	E1	4704	B4		
2418	E4	2819	A1	3148	A4	3628	A3	4705	B4		
2419	E3	2821	A1	3149	A4	3701	D4	4706	B4		
2420	E4	2822	A3	3151	B3	3702	D4	4802	A1		
2421	E3	2823	A3	3200	A3	3703	B4	4803	A1		
2430	E4	2824	A3	3202	A3	3704	B4	4809	A1		
2431	E2	2825	A3	3203	A3	3807	A2	4810	A1		
2432	E4	2826	A3	3204	A3	3808	A2	4811	A1		
2433	E3	2827	A1	3208	A3	3809	A2	4900	A3		
2502	B1	2831	A1	3209	A3	3810	A2	4905	A2		
2503	B1	2832	A1	3215	A3	3811	C2	4906	A2		

Digital Board Unit Test Point View < DVD Section >

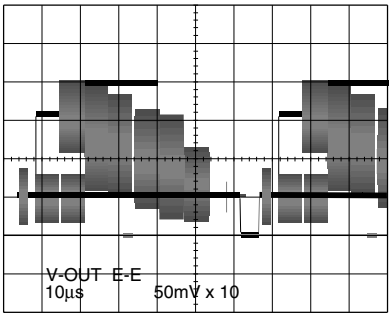


F001	A1	F301	C3	F707	B4	F953	C3
F002	A1	F302	C3	F708	C4	F954	B2
F003	B1	F303	C3	F800	A1	F955	B2
F004	A1	F304	C3	F801	A2	F956	A1
F005	A1	F305	D3	F802	A1	F957	B2
F006	A1	F306	C3	F803	A1	F958	B2
F007	D4	F307	C3	F804	A1	F959	B4
F008	A1	F308	C4	F805	A1	F960	B1
F009	A1	F309	C3	F806	A1		
F010	A1	F310	C3	F807	A1		
F011	A1	F311	C3	F808	A1		
F012	B1	F312	C3	F809	A1		
F013	A1	F313	C3	F810	A1		
F014	A1	F314	C3	F811	A2		
F015	A1	F315	D4	F812	A3		
F016	A1	F316	D4	F813	A3		
F017	A1	F317	C4	F814	B1		
F024	A1	F500	C2	F815	B1		
F028	A1	F501	C3	F816	A1		
F029	A1	F502	C2	F817	A1		
F110	C2	F503	E4	F818	A1		
F111	C2	F504	D1	F819	A1		
F112	B2	F505	B1	F820	C2		
F113	B3	F506	C3	F821	C2		
F114	B2	F508	D1	F822	C2		
F115	B3	F510	A2	F823	C2		
F116	B4	F511	B1	F824	C2		
F118	A1	F512	C2	F825	C2		
F119	A1	F513	C2	F826	C2		
F120	A1	F520	B3	F827	C2		
F121	B1	F521	D1	F828	A3		
F123	A1	F522	B1	F829	A3		
F130	A3	F523	B1	F830	A3		
F131	A3	F524	A3	F831	C2		
F132	D3	F525	D1	F832	A1		
F133	C3	F526	B1	F833	A1		
F134	A2	F528	C4	F834	A1		
F135	A2	F530	C1	F835	A1		
F136	A2	F531	C1	F836	A2		
F137	A2	F534	B1	F900	A2		
F138	A2	F600	C3	F901	A2		
F139	B4	F601	D4	F902	A2		
F141	B4	F602	C4	F903	A2		
F143	B4	F603	D4	F904	A2		
F144	C3	F604	D4	F905	A2		
F145	C4	F605	C4	F906	B2		
F146	C3	F606	C4	F907	A2		
F147	C4	F607	D4	F908	A2		
F148	C3	F608	C4	F909	B2		
F149	D4	F609	C4	F910	A3		
F200	A4	F610	B3	F911	A3		
F201	A3	F620	E1	F912	D4		
F202	A4	F621	E1	F913	A3		
F203	A3	F622	D1	F914	D4		
F204	A3	F623	D1	F915	A3		
F205	A3	F624	E1	F916	A1		
F206	A3	F625	E1	F917	A2		
F207	A3	F626	E1	F918	A2		
F209	A3	F627	E1	F919	A2		
F210	B3	F628	D1	F920	A2		
F211	D4	F629	D1	F921	A2		
F212	C4	F630	C1	F922	A2		
F213	C3	F631	C1	F923	C2		
F214	B3	F632	C1	F924	A2		
F215	D4	F633	C1	F925	A2		
F216	A4	F634	C1	F926	A2		
F217	A4	F635	C1	F927	A2		
F218	A3	F636	C1	F928	A2		
F219	A4	F637	D1	F929	A2		
F220	B3	F638	D1	F936	A2		
F221	B4	F639	D1	F937	A1		
F222	B3	F640	D1	F938	A1		
F223	A3	F641	D1	F939	A2		
F224	B3	F642	D1	F940	A2		
F225	A3	F643	D1	F941	A3		
F226	B3	F644	D1	F942	A2		
F227	A3	F645	D1	F943	A2		
F228	A4	F646	D1	F944	A2		
F229	A4	F648	E1	F945	A2		
F232	A4	F650	B4	F946	A3		
F233	A4	F651	C4	F947	A2		
F234	A4	F701	D4	F948	A2		
F235	A4	F702	D4	F949	C3		
F236	A3	F704	B4	F950	B2		
F237	A3	F705	B4	F951	B2		
F300	C2	F706	B4	F952	A2		

WAVEFORMS

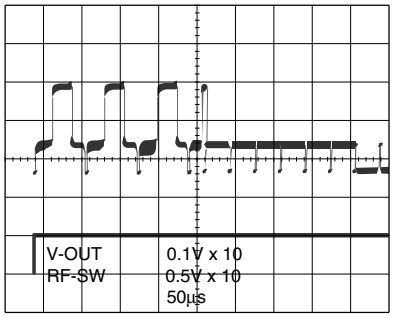
NOTE:
Input: COLOR BAR SIGNAL (WITH 1KHz AUDIO SIGNAL)

WF1 TP751



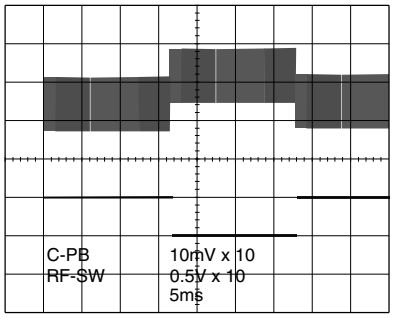
WF1 UPPER TP751

WF2 LOWER TP302

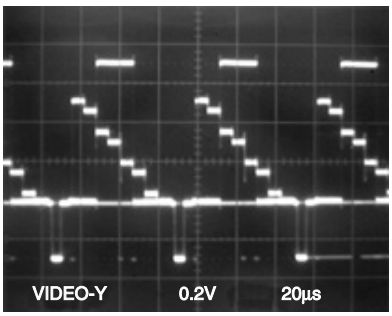


WF3 UPPER TP301

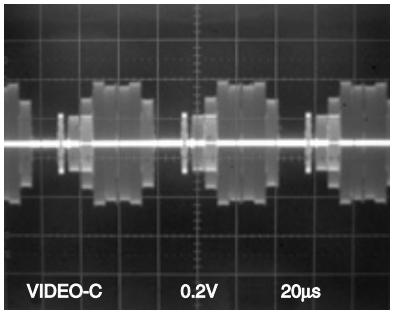
WF2 LOWER TP302



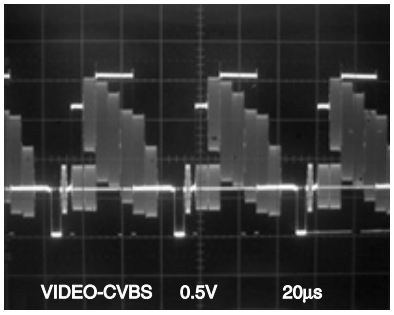
WF4 Pin 9 of CN213



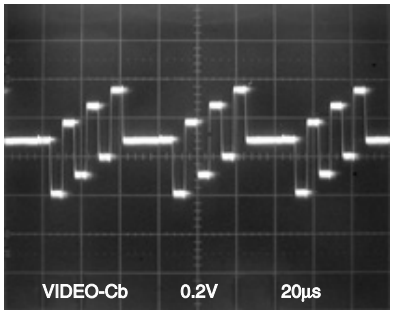
WF5 Pin 7 of CN213



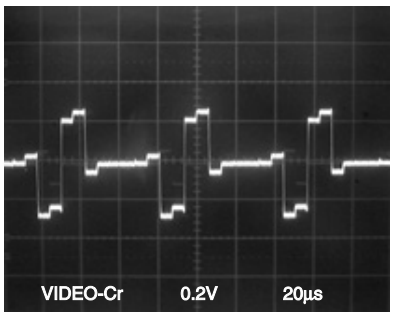
WF6 Pin 18 of CN213



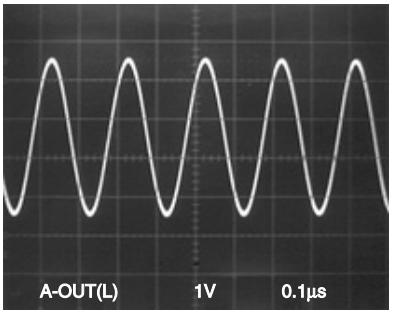
WF7 Pin 1 of CN213



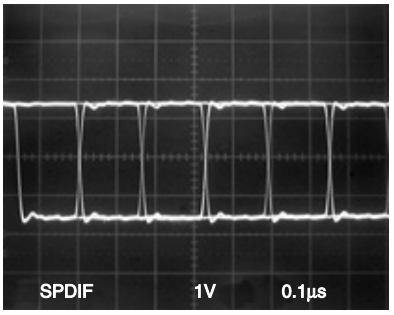
WF8 Pin 5 of CN213



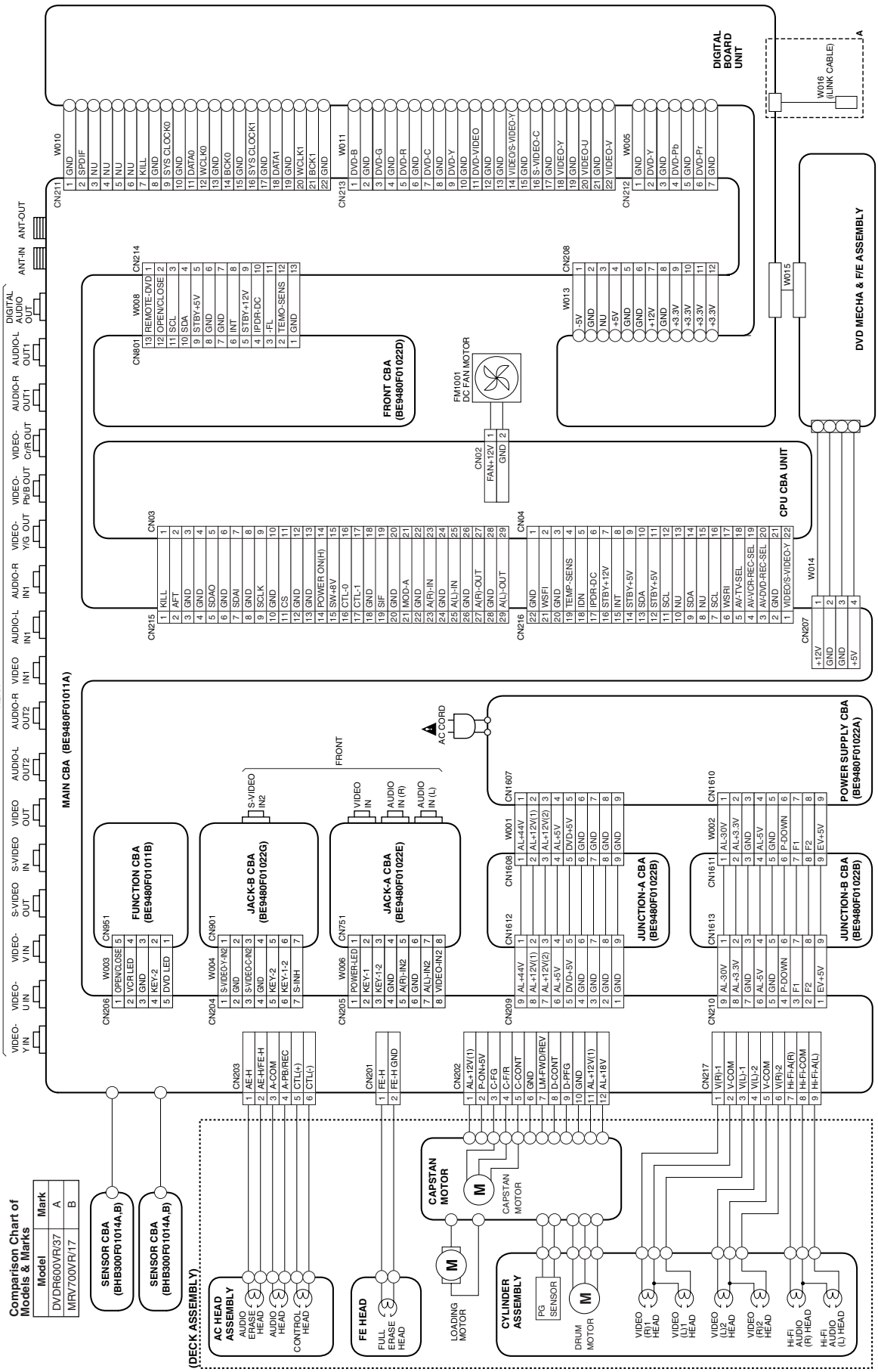
WF9 Pin 29 of CN215



WF10 Pin 2 of CN211



WIRING DIAGRAM



SYSTEM CONTROL TIMING CHARTS

[VCR Section]

Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
3.76V~4.50V (4.12V)	EJ
4.51V~5.00V (5.00V)	CL
0.00V~0.25V (0.00V)	SB
1.06V~1.50V (1.21V)	TL
0.66V~1.05V (0.91V)	FB
1.99V~2.60V (2.17V)	SF
1.51V~1.98V (1.80V)	SM
3.20V~3.75V (3.40V)	AU
0.26V~0.65V (0.44V)	AL
4.51V~5.00V (5.00V)	SS
2.61V~3.19V (2.97V)	RS

Note:

Note:

EJ ⟶ RS: Loading FWD (LM-FWD/REV “H”)
RS ⟶ EJ: Loading REV (LM-FWD/REV “L”)
Stop (A) = Loading
Stop (B) = Unloading

Note:

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(M), (FF / REW)
SM	Stop(M), (FF / REW) ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ RS (REW Search)
RS	RS (REW Search)

Still/Slow Control
Frame Advance Timing Chart

1) SP Mode

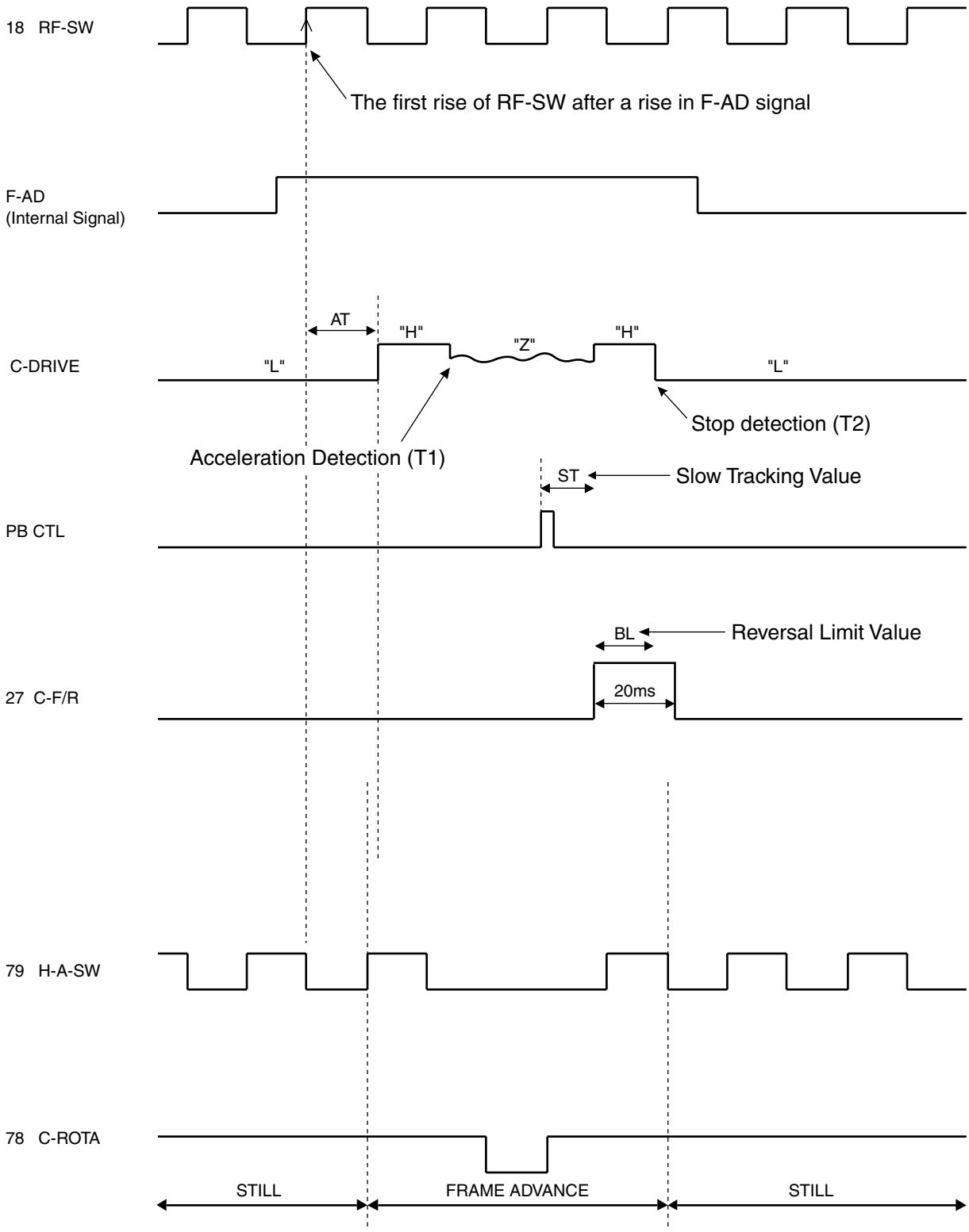


Fig. 1

2) LP/SLP Mode

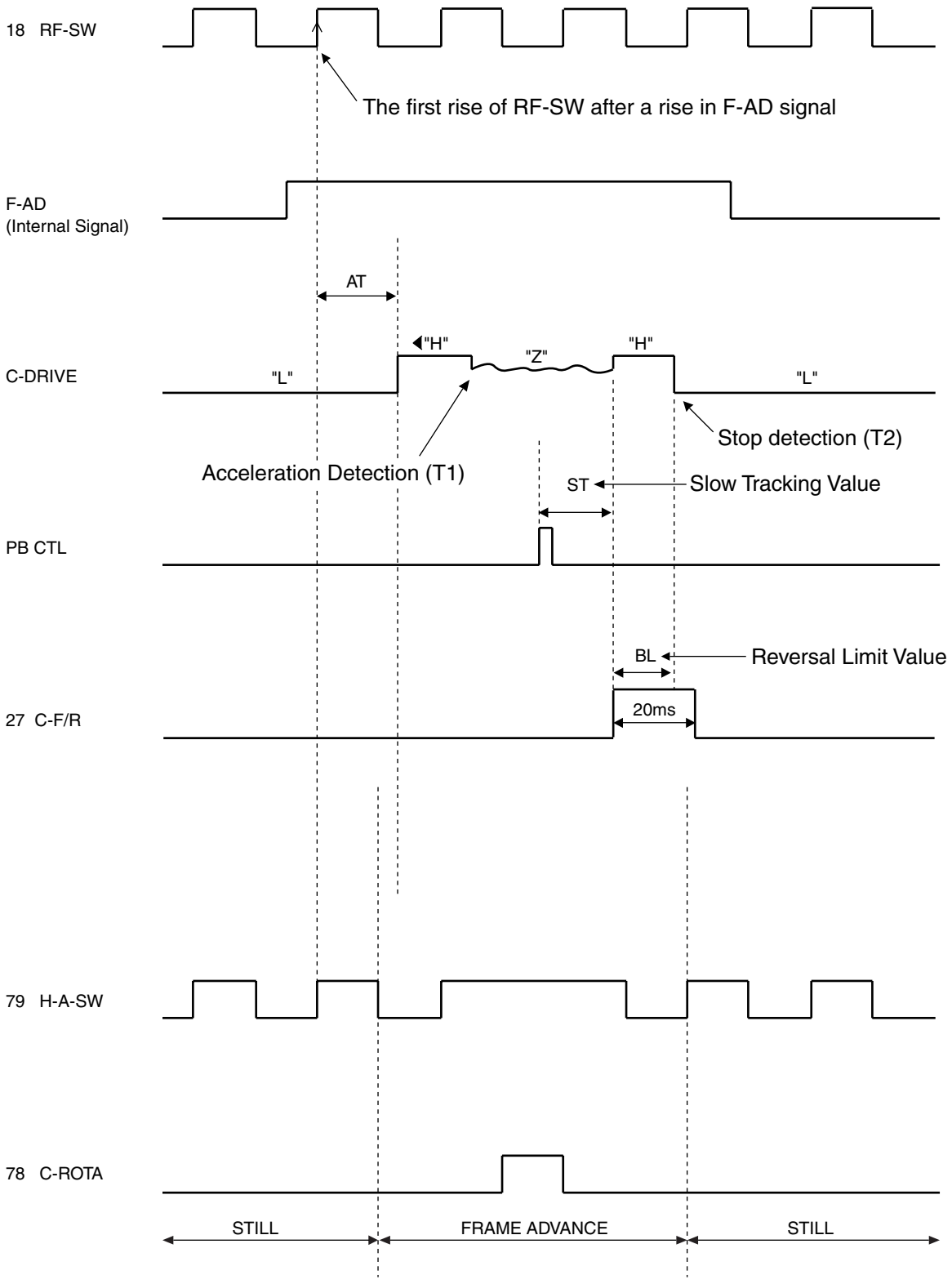


Fig. 2

1. EJECT (POWER OFF) -> CASSETTE IN (POWER ON) -> STOP(B) -> STOP(A) -> PLAY -> RS -> FS -> PLAY -> STILL -> PLAY -> STOP(A)

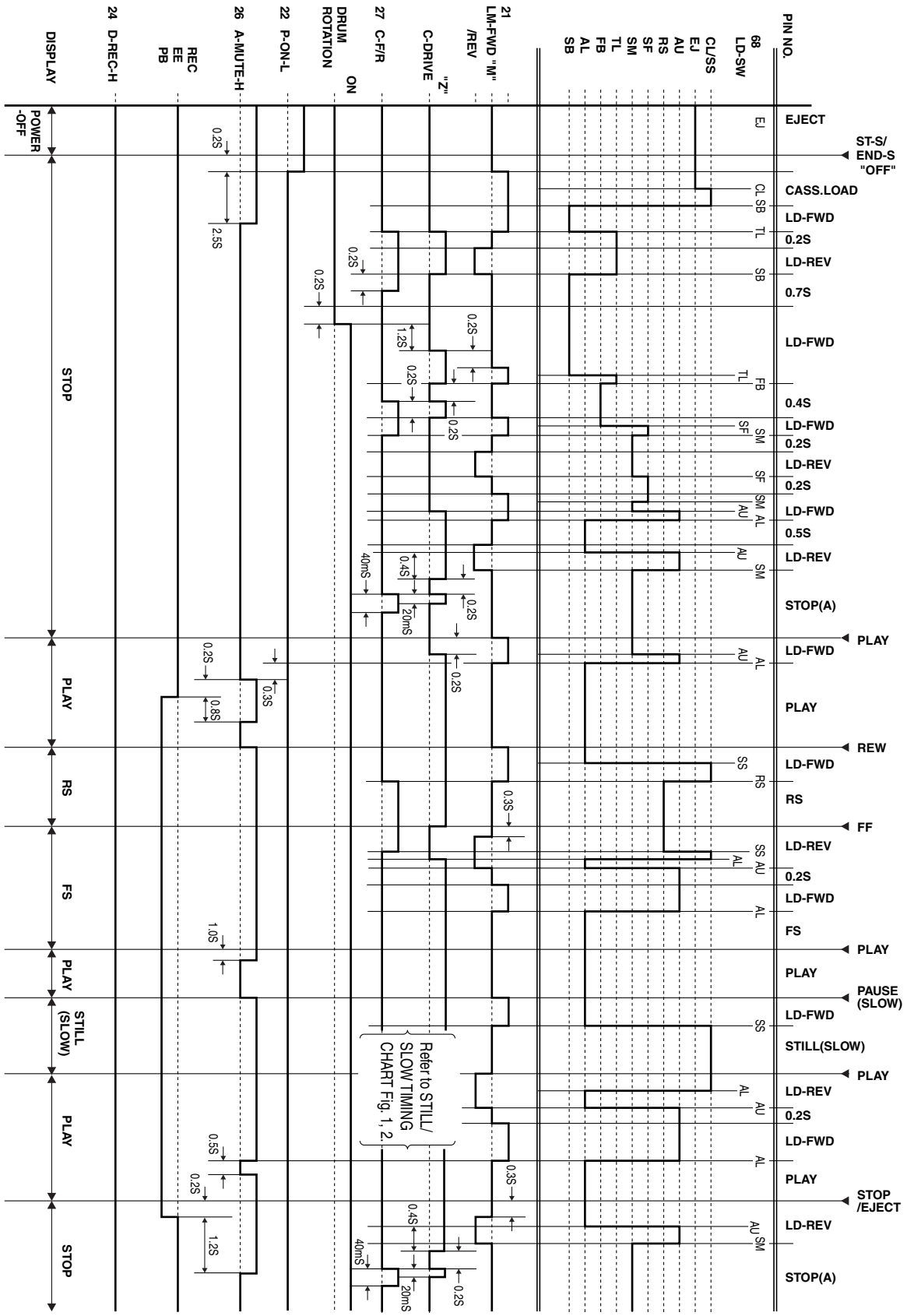


Fig. 3

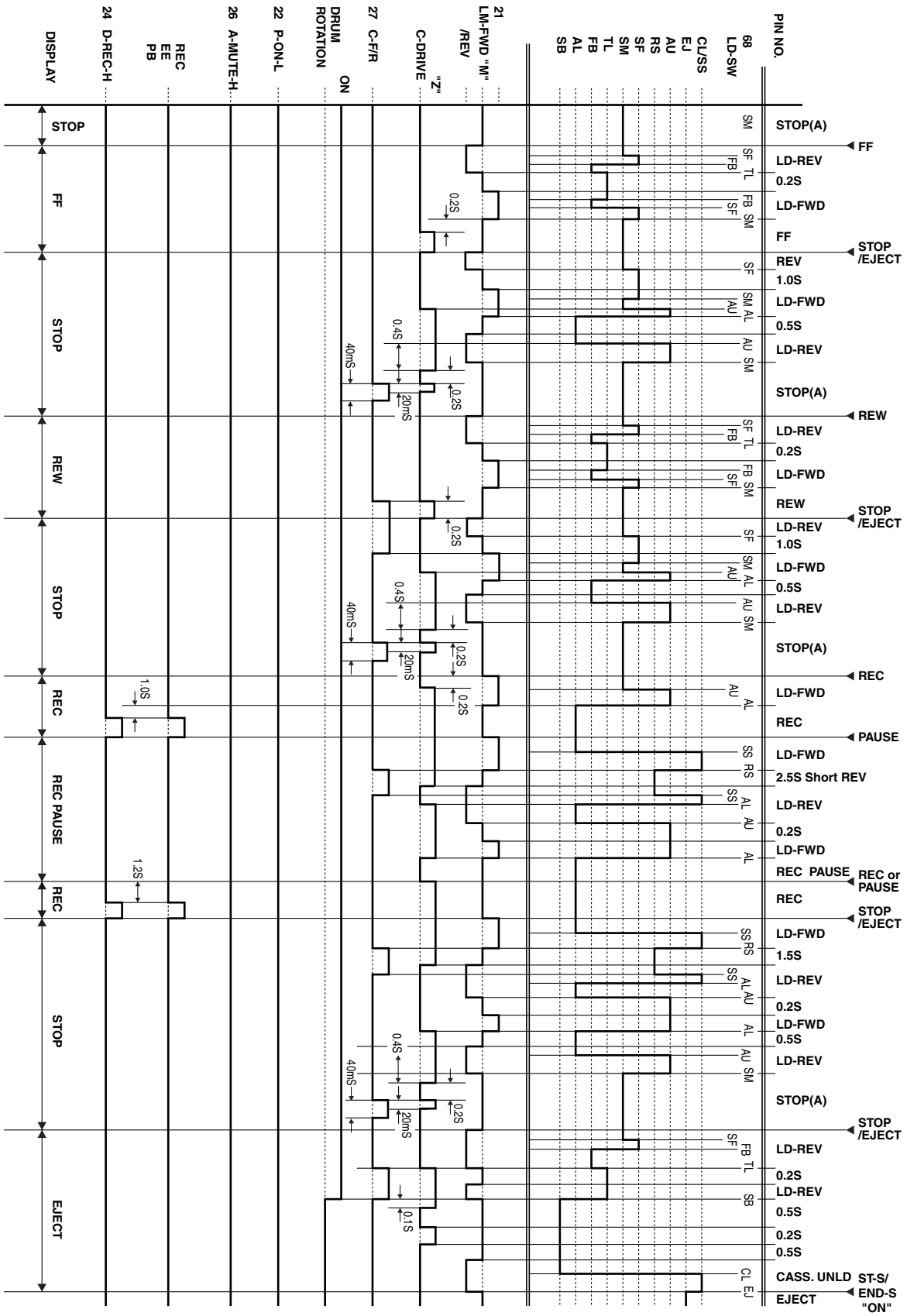
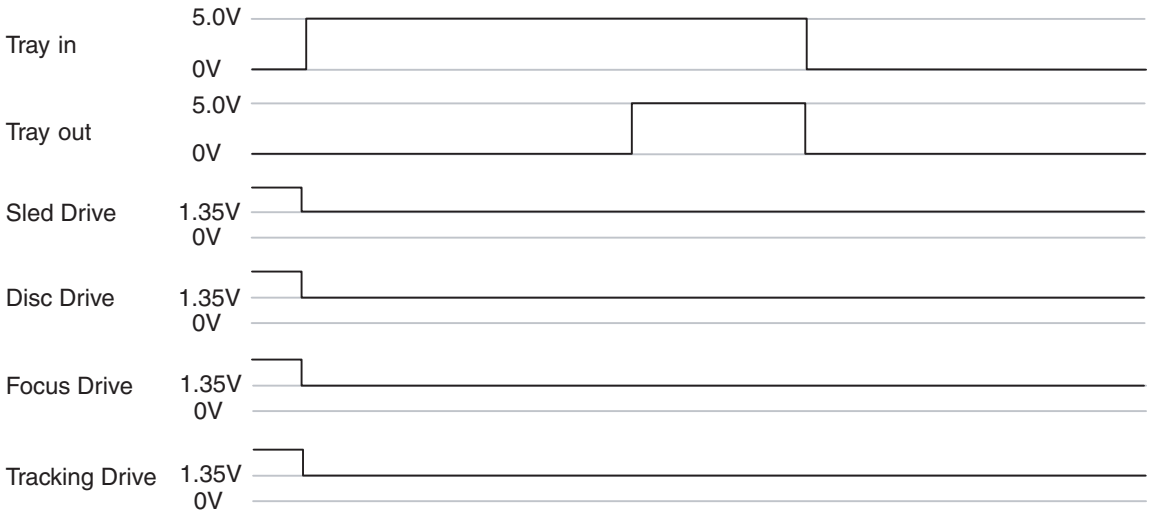

2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT
PIN NO.
68 LD-SW
CL/SS
EJ
AU
RS
SF
SM
TL
FB
AL
SB
21 LM-FWD "M" /REV
"Z" C-DRIVE
27 C-F/R
DRUM ROTATION ON
22 P-ON-L
26 A-MUTE-H
REC EE PB
24 D-REC-H
DISPLAY
STOP
FF
STOP
REW
STOP
REC
REC PAUSE
REC
STOP
EJECT
STOP(A)
FF
LD-REV
0.2S
LD-FWD
FF
STOP /EJECT
REV
1.0S
LD-FWD
0.5S
LD-REV
STOP(A)
REW
LD-REV
0.2S
LD-FWD
REW
STOP /EJECT
LD-REV
1.0S
LD-FWD
0.5S
LD-REV
STOP(A)
REC
LD-FWD
REC
PAUSE
LD-FWD
2.5S Short REV
LD-REV
0.2S
LD-FWD
REC PAUSE
REC or PAUSE
REC
STOP /EJECT
LD-FWD
1.5S
LD-REV
0.2S
LD-FWD
0.5S
LD-REV
STOP(A)
STOP /EJECT
LD-REV
0.2S
LD-REV
0.5S
0.2S
0.5S
CASS. UNLD
EJECT
ST-S/ END-S "ON"
0.2S
0.4S
40mS
20mS
1.0S
1.2S
0.1S

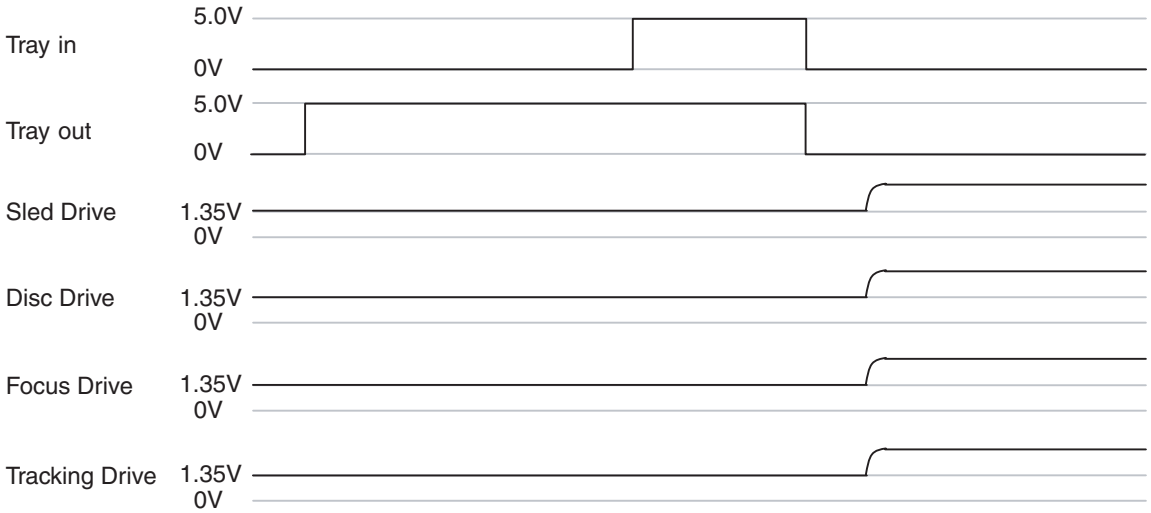
Fig. 4

[DVD Section]

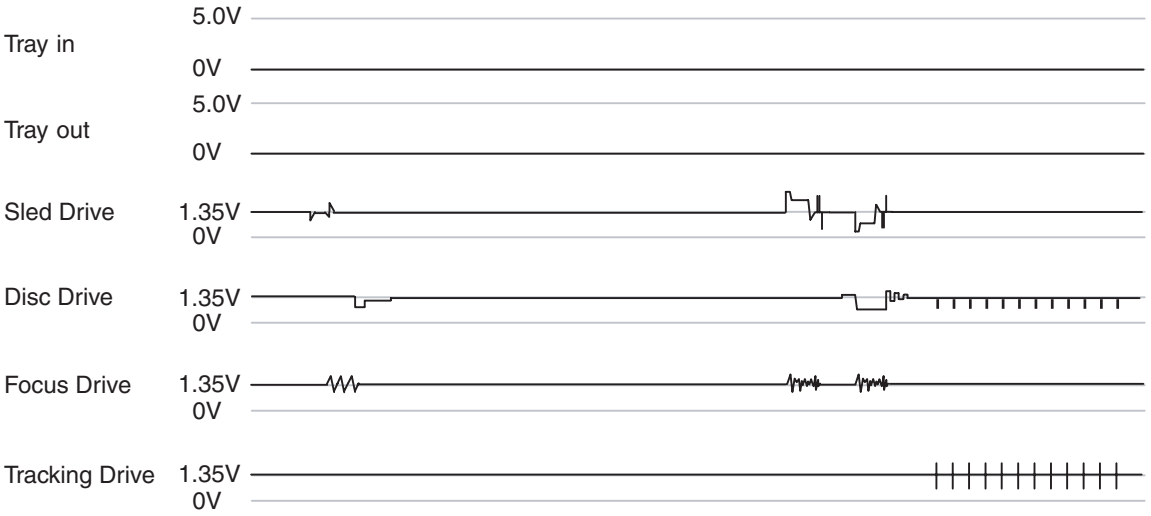
Tray in



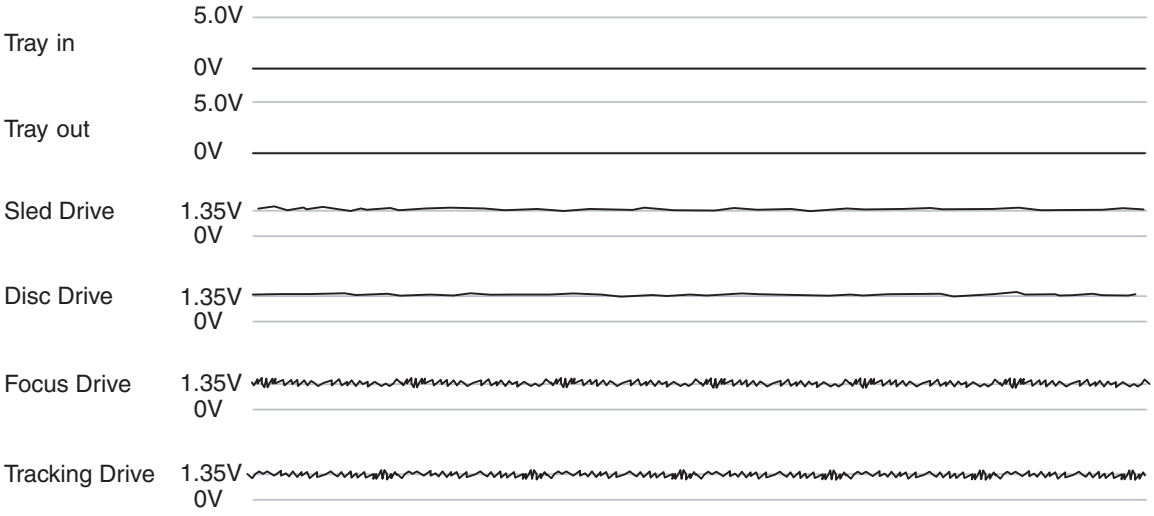
Tray out



Spin up



Playing



IC PIN FUNCTION DESCRIPTIONS

[VCR Section]

IC228 (SYSTEM CONTROL MICROPROCESOR)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	IN	CS	Communication of Select with Sub Micro Controller	L
2	IN	REC-SAF-SW	Recording Safety SW Detect (With Record tab = "L"/ With out Record tab = "H")	H
3	IN	T-REEL	Take Up Reel Rotation Signal	PULSE
4	-	N.U.	Not Used	-
5	IN	REMOTE-VIDEO	Remote Control Sensor	L
6	IN	S-CLK	Communication of Clock with Sub Micro Controller	H/L
7	IN	SDA-IN	Communication of Data from Sub Micro Controller	H/L
8	OUT	SDA-OUT	Communication of Data to Sub Micro Controller	H/L
9	OUT	DISPLAY-ENA	FL Display Driver IC Enable Control Output Signal	L
10	OUT	DISPLAY-DATA	FL Display Driver IC Data Control Output Signal	H/L
11	OUT	DISPLAY-CLK	FL Display Driver IC Clock Control Output Signal	H/L
12	IN/ OUT	IIC-BUS-SDA	IIC BUS Control Data	H/L
13	OUT	IIC-BUS-SCL	IIC BUS Control Clock	H/L
14	OUT	YCA-SCL	YCA IC Control Clock	H/L
15	OUT	YCA-SDA	YCA IC Control Data	H/L
16	OUT	YCA-CS	YCA IC Control Chip Select	H
17	-	N.U.	Not Used	-
18	OUT	RF-SW	Video Head Switching Pulse	H/L
19	OUT	D-V SYNC	Dummy V-sync Output	H/Hi-z
20	IN	RESET	System Reset Signal (Reset="L")	L
21	OUT	LM-FWD/ REV	Loading Motor FWD/ REV Output	H/Z/L
22	OUT	P-ON-L	Power On Signal to Low	L
23	-	N.U.	Not Used	-
24	OUT	D-REC-H	Delayed Record Signal	H
25	OUT	Hi-Fi-H-SW	HiFi Audio Head Switching Pulse	H/L
26	OUT	A-MUTE-H	Audio Mute Control Signal (Mute = "H")	H
27	OUT	C-F/R	Capstan Motor FWD/ REV Control Signal (FWD="L"/REV="H")	H/L
28	OUT	C-CONT	Capstan Motor Control Signal	PWM
29	OUT	D-CONT	Drum Motor Control Signal	PWM
30	-	N.U.	Not Used	-
31	-	VDD	VDD (AL+5V)	-
32	OUT	OSCO	Main Clock Output 14.31818MHz	-
33	IN	OSCI	Main Clock Input 14.31818MHz	-
34	-	VSS	VSS (GND)	
35	-	N.U.	Not Used	-
36	-	N.U.	Not Used	-
37	IN	SXI	Operation Mode Selecting Input Signal	-
38	OUT	VIDEO-OUT	Composite Video Signal Output	-
39	-	Vss2	Vss2 (GND)	-
40	IN	VIDEO-IN	Composite Video Signal Input	-
41	IN	C-SYNC	Composite Synchronized Pulse	PULSE
42	-	VDD2	VDD2 (AL+5V)	-
43	IN	AFCC	Low Path Filter Input Signal For AFC	-
44	OUT	AFCLPF	Low Path Filter Output Signal For AFC	-
45	OUT	INSEL2	Input Select	H/L
46	-	N.U.	Not Used	-

Pin No.	IN/ OUT	Signal Name	Function	Active Level
47	IN	D-PFG	Drum PG/FG Input Signal	PULSE
48	IN	ON/OFF	On/Off Switching Signal	-
49	IN	C-FG	Capstan Motor Rotation Detection Pulse	PULSE
50	-	AFG	GND	-
51	OUT	VRO	Servo Standard Voltage Output	-
52	IN	VRI	Servo Standard Voltage Input	-
53	-	AVss	AVSS (GND)	-
54	IN	CTLA	CTL Amp. AC GND	-
55	-	AVDD	AVDD (AL+5V)	-
56	IN/ OUT	CTL (+)	Playback/Record Control Signal (+)	-
57	IN/ OUT	CTL (-)	Playback/Record Control Signal (-)	-
58	OUT	CTL	Amp. Output Control Signal for Test Point	-
59	IN	HiFi/ NOR-IN	Audio Mode Input HiFi="L"/ Normal="H"	A/D
60	IN	POWER-SAF	P-ON+5V Power Detection Input Signal	A/D
61	-	N.U.	Not Used	-
62	IN	END-S	Tape End Position Detect Signal	A/D
63	-	N.U.	Not Used	-
64	IN	V-ENV	Video Envelope Comparator Signal	A/D
65	IN	PG-DELAY	Video Head Switching Pulse Signal Adjusted Voltage	A/D
66	IN	KEY-2	A/D Key Data Signal 2	A/D
67	IN	KEY-1	A/D Key Data Signal 1	A/D
68	IN	LD-SW	Deck Mode Position Detector Signal	A/D
69	IN	ST-S	Tape Start Position Detector Signal	A/D
70	OUT	VCR-IND	VCR Mode LED Signal Output	H
71	OUT	DVD-IND	DVD Mode LED Signal Output	H
72	-	N.U.	Not Used	-
73	OUT	POWER-IND	Power LED Signal Output	H
74	-	N.U.	Not Used	-
75	-	N.U.	Not Used	-
76	-	N.U.	Not Used	-
77	-	N.U.	Not Used	-
78	OUT	C-ROTA	Color Phase Rotary Changeover Signal	H/L
79	OUT	H-A-SW	Video Head Amp Switching Pulse	H/L
80	IN	H-A-COMP	Head Amp Comparator Signal	H/L

Notes:

Abbreviation for Active Level:

PWM -----Pulse Wide Modulation

A/D--------Analog - Digital Converter

IC801 (FRONT PANEL CONTROL)

Pin No.	IN/ OUT	Signal Name	Name Function
1	-	N.U.	Not Used
2	-	N.U.	Not Used
3	-	N.U.	Not Used
4	-	N.U.	Not Used
5	-	N.U.	Not Used
6	-	N.U.	Not Used
7	-	GND	Ground
8	OUT	XOUT	External Clock Output
9	IN	XIN	External Clock Input
10	IN/ OUT	RESET	Reset Signal Input / Watchdog Timer Output / Address Trap Reset Output / System Clock Reset Output
11	-	N.U.	Not Used
12	-	N.U.	Not Used
13	-	GND	Ground
14	-	N.U.	Not Used
15	IN	INT	External Interrupt "0" Input
16	-	N.U.	Not Used
17	-	N.U.	Not Used
18	-	N.U.	Not Used
19	IN/ OUT	PWM-VGNSTBY	PWM (Pulse Width Modulation) Output
20	IN	REMOTE-DVD	Remote Signal Input
21	-	N.U.	Not Used
22	-	N.U.	Not Used
23	IN/ OUT	SCL	IIC BUS Control Clock
24	IN/ OUT	SDA	IIC BUS Control Data
25	-	N.U.	Not Used
26	-	N.U.	Not Used
27	-	N.U.	Not Used
28	IN	TEST1	Terminal for Shipment Examination (Always “L“)
29	-	N.U.	Not Used
30	-	N.U.	Not Used
31	-	N.U.	Not Used
32	-	N.U.	Not Used
33	-	N.U.	Not Used
34	-	N.U.	Not Used
35	-	N.U.	Not Used
36	IN	K1	Key Data 1 Input
37	IN	K2	Key Data 2 Input
38	-	GND	Ground
39	-	VAREF	GND
40	-	VDD	+5V Power Supply
41	OUT	V0	VFT Output (High Electricity Output)
42		V2	
43		8G/9G	
44		7G	
45		6G	
46		5G	
47		4G	
48		3G	
49		2G	
50		1G	
51		S13	
52		S12	
53		S9	
54		S11	
55		S10	
56		S8	

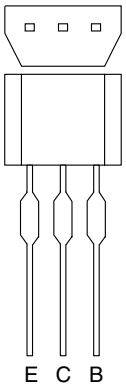
Pin No.	IN/ OUT	Signal Name	Name Function
57	OUT	S7	VFT Output (Middle Electricity Output)
58		S6	
59		S5	
60		S4	
61		S3	
62		S2	
63		S1	
64		S14	
65		S15	
66		S16	
67		S17	
68		S18	
69		S19	
70		S20	
71		S21	
72		S22	
73		S23	
74		S24	
75		S25	
76		S26	
77		S27	
78	-	VKK	Indicator Panel Drive Power Supply
79	-	GND	Ground
80	-	N.U.	Not Used

[DVD Section]

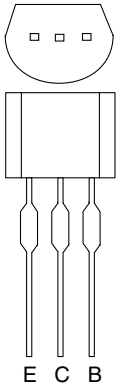
IC221 (FIP DRIVER)

Pin No.	IN/ OUT	Signal Name	Name Function
1	IN	CLK	Clock Input
2	IN	STB	Serial Interface Strobe
3	-	N.U.	Not Used
4	-	N.U.	Not Used
5	-	VSS	GND
6	-	VDD	Power Supply
7	OUT	S1	Segment Output
8		S2	
9		S3	
10		S4	
11		S5	
12		S6	
13		S7	
14		S8	
15	-	VEE	Pull Down Level
16	OUT	S9	Segment Output
17	OUT	7G	Grid Output
18		6G	
19		5G	
20		4G	
21		3G	
22		2G	
23		1G	
24	-	VDD	Power Supply
25	-	VSS	GND
26	IN	OSC	Oscillator Input
27	-	N.U.	Not Used
28	IN	DIN	Serial Data Input

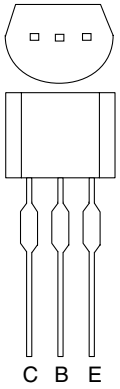
LEAD IDENTIFICATIONS



2SA1175(J,H,F)
2SC2785(K)
BN1F4M-T
KRA103M
KRC108M
KTA1266(GR)
KTA1267(GR,Y)
KTC3193(Y)
KTC3199(BL,Y)

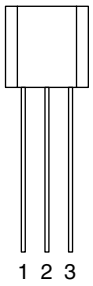


2SA1015-GR(TPE2)
2SC1815-BL(TPE2)
2SC1815-GR(TPE2)
2SC2120-Y(TPE2)
KTC3198(GR,Y)
KTC3203(Y)

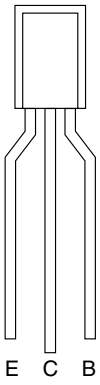


BC327-25
BC337-25-AT
BC546-B-AT
BC547-B-AT
BC547-S-BB
BC557-B-AT

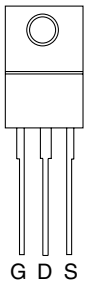
KIA431A-AT
TL431A-TA

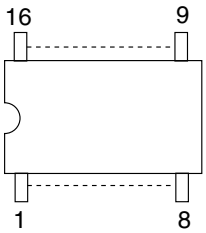


2SC536NF-NPA-AT
2SC536NG-NPA-AT



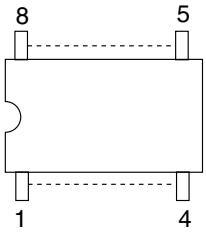
2SK2095N
2SK3563



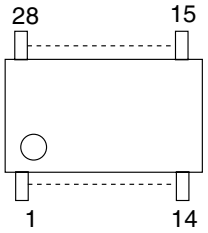


BU4052BCF-E2
BU4053BCF
CD4052BCSJX
CD4052BNSR
CD4053BCSJX
CD4053BNSR
NJM2285-TE1
TC4052BF(EL)
TC4053BF(N)

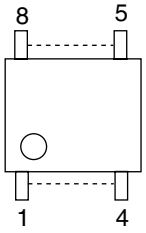
MC33078DR2



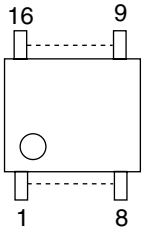
PT6313-S-TP



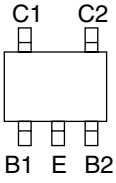
RSS090N03L02TB



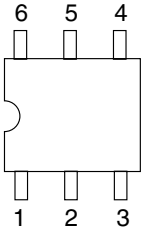
UDA1334BTS
UDA1361TS



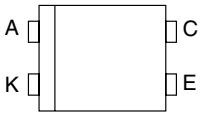
FMG4A T148
RN1511(TE85R)



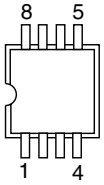
RTQ035N03 TR



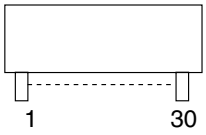
EL817A
EL817B
EL817C
LTV-817B-F
LTV-817C-F
PS2561A-1(Q,W)



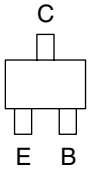
BR24L02F-WE2
CAT24WC02JI



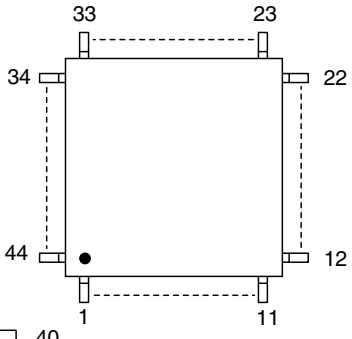
7-BT-300GN



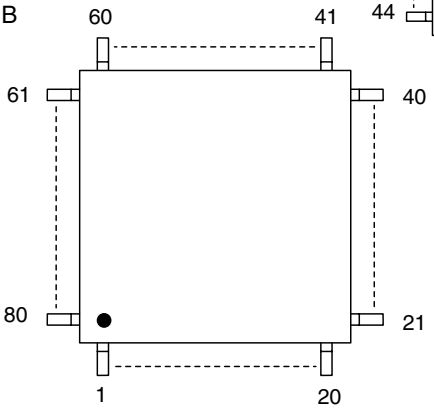
KRA303-RTK



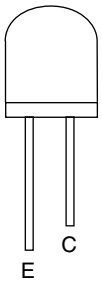
STV6618



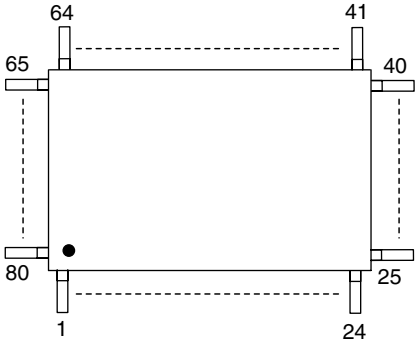
LA71205M-MPB-E
LA72670BM-MPB-E
QSZAA0RMS027



MID-32A22F
PT204-6B-12



TMP87CH74AF-3RU1(Z)



Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
S: Source
G: Gate
D: Drain

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

To order parts call the TOLL FREE Philips Sales Center number: 1 - 800 - 851 - 8885
(In Canada) 1 - 800 - 363 - PART.
1 - 800 - 535 - 3715 (Fax).

NOTES:
1. Parts that are not assigned part numbers (---- --- ----- or blank) are not normally available.
2. " ● "=SMD

CPU CBA UNIT

Ref. No.	⚠	Description	ID No.	Part No.
		CPU CBA UNIT	1VMN20220	9965 000 25430

DIGITAL BOARD UNIT

Ref. No.	⚠	Description	ID No.	Part No.
		DIGITAL BOARD UNIT	1VSA10574	4835 214 38229

MCV CBA

Ref. No.	⚠	Description	ID No.	Part No.
		MCV CBA Consists of the following:	1VSA10561	9965 000 25434
		MAIN CBA (MCV-A) FUNCTION CBA (MCV-B) SENSOR CBA	---------- ---------- 1VSA10578	9965 000 14801

MAIN CBA

Ref. No.	⚠	Description	ID No.	Part No.
		MAIN CBA (MCV-A) Consists of the following::	----------	
		CAPACITORS		
C201		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --- -----
C202		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --- -----
●C204		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C205		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C206		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C207		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C208		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C209		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C211		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C212		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C214		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C215		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C216		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C217		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C218		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C219		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C220		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C221		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C222		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C223		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C224		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C225		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C226		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C227		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C230		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
C232		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C233		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C235		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C236		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C238		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C239		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C240		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C241		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C242		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C243		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
		CHIP CERAMIC CAP. 27pF/50V +/-5% (CG)	CHD1JJ3CG270	4835 122 87029
●C244		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C247		CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or	CHD1JJ3CH270	4835 122 87029
		CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JJ3CG270	
●C248		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C249		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --- -----
C250		ELECTROLYTIC CAP. 10µF/16V ±20% NP	CP1CMASNC100	---- --- -----
●C252		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C253		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C255		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203

Ref. No.	⚠	Description	ID No.	Part No.
●C256		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
C258		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C259		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C260		CHIP CERAMIC CAP. 1μF/10V +80/-20% (F)	CHD1AZ30F105	4835 122 87639
●C274		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C275		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C277		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C278		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C279		ELECTROLYTIC CAP. 100μF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C289		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C290		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C292		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C293		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87193
●C294		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C297		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C298		CHIP CERAMIC CAP.(MELF) 470pF/50V ±10% (W)	CZM1JK30B471	4835 122 87203
●C299		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C300		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C302		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C303		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C304		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C306		CHIP CERAMIC CAP.(1608) 0.033μF/50V ±10% (B) or	CHD1JK30B333	4835 122 87384
		CHIP CERAMIC CAP.(1608) 0.033μF/25V ±10% (B)	CHD1EK30B333	4835 122 87221
C307		ELECTROLYTIC CAP. 4.7μF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
●C308		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C310		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C312		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C316		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C317		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C318		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C319		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C320		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C321		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C322		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634

Ref. No.	⚠	Description	ID No.	Part No.
●C323		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C325		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C326		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C327		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C328		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C329		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C330		ELECTROLYTIC CAP. 10μF/16V ±20% NP	CP1CMASNC100	---- --- -----
●C333		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C334		CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
C336		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C341		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C342		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C343		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C345		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C346		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C347		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C348		ELECTROLYTIC CAP. 47μF/16V ±20% H7	CE1CMAVSL470	4835 124 47073
●C349		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C350		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C351		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C354		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C355		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C356		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C357		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C358		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C359		CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or	CHD1JJ3CH270	4835 122 87029
		CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JJ3CG270	4835 122 87029
●C362		CHIP CERAMIC CAP.(1608) 1μF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C363		ELECTROLYTIC CAP. 4.7μF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407

Ref. No.	⚠	Description	ID No.	Part No.
C364		ELECTROLYTIC CAP. 4.7µF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C366		ELECTROLYTIC CAP. 0.1µF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C368		ELECTROLYTIC CAP. 0.1µF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C371		ELECTROLYTIC CAP. 4.7µF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
C373		ELECTROLYTIC CAP. 4.7µF/50V ±20% H7	CE1JMAVSL4R7	4835 124 97061
C374		ELECTROLYTIC CAP. 47µF/16V ±20% H7	CE1CMAVSL470	4835 124 47073
C375		ELECTROLYTIC CAP. 0.1µF/50V ±20% H7	CE1JMAVSLR10	4835 124 47048
C376		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C377		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
C379		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
C380		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C381		ELECTROLYTIC CAP. 4.7µF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C383		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C384		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C386		CHIP CERAMIC CAP.(MELF) 4700pF/16V ±10% (Y)	CZM1CK30Y472	4835 122 87646
●C388		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C389		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C390		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C393		ELECTROLYTIC CAP. 4.7µF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C394		ELECTROLYTIC CAP. 220µF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
●C395		CHIP CERAMIC CAP.(1608) 0.022µF/50V ±10% (B) or	CHD1JK30B223	4835 122 87209
		CHIP CERAMIC CAP.(1608) 0.022µF/25V ±10% (B)	CHD1EK30B223	4835 122 87152
●C400		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C401		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C402		CHIP CERAMIC CAP.(MELF) 4700pF/16V ±10% (Y)	CZM1CK30Y472	4835 122 87646
●C403		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C404		ELECTROLYTIC CAP. 4.7µF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
C406		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C407		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C410		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
C412		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C414		CHIP CERAMIC CAP.(1608) 390pF/50V ±5% (CH) or	CHD1JJ3CH391	4835 122 87268
		CHIP CERAMIC CAP. 390pF/50V ±5% (CG)	CHD1JJ3CG391	4835 122 87268
C416		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●C417		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C418		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C420		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C422		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C423		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
C424		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C425		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C427		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C428		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C429		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C430		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C432		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C433		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
●C434		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C435		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C438		CHIP CERAMIC CAP.(1608) 68pF/50V ±5% (CH) or	CHD1JJ3CH680	4835 122 87057
		CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1JJ3CG680	4835 122 87057
●C440		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C444		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C445		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C447		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C448		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C449		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C450		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C452		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
●C455		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
●C459		CHIP CERAMIC CAP.(1608) 0.047µF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047µF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
●C460		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C461		CHIP CERAMIC CAP.(1608) 0.047µF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047µF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
●C463		CHIP CERAMIC CAP.(1608) 0.1µF/50V ±10% (B) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
C465		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C466		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C467		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●C468		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
●C470		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
C472		ELECTROLYTIC CAP. 22µF/6.3V ±20% H7	CE0KMAVSL220	4835 124 47238
C473		ELECTROLYTIC CAP. 33µF/6.3V ±20% H7	CE0KMAVSL330	4835 124 47169
●C474		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C476		CHIP CERAMIC CAP.(1608) 0.012µF/50V ±10% (B)	CHD1JK30B123	4835 122 87661

Ref. No.	⚠	Description	ID No.	Part No.
C477		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C478		CHIP CERAMIC CAP.(1608) 2700pF/50V ±10% (B)	CHD1JK30B272	4835 122 87098
●C479		CHIP CERAMIC CAP.(MELF) 1000pF/35V ±10% (Y)	CZM1GK30Y102	4835 122 87648
C480		ELECTROLYTIC CAP. 4.7µF/25V ±20% H7	CE1EMAVSL4R7	4835 124 47407
●C482		CHIP CERAMIC CAP.(1608) 6800pF/50V ±10% (B)	CHD1JK30B682	4835 122 87278
C487		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
C488		ELECTROLYTIC CAP. 220µF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
C489		CERAMIC CAP. 470pF/100V ±10% (B) or	CCD2AKP0B471	4835 122 47673
		CERAMIC CAP. 470pF/500V ±10% (B)	CCD2JKS0B471	4835 122 47211
C491		FILM CAP.(P) 0.018µF/100V ±5% or	CA2A183MS029	4835 121 47682
		FILM CAP.(P) 0.018µF/50V ±5%	CA1J183MS029	4822 121 42701
C494		ELECTROLYTIC CAP. 220µF/6.3V ±20% H7	CE0KMAVSL221	4835 124 47168
●C498		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
●C500		CHIP CERAMIC CAP.(1608) 0.01µF/50V +80/-20% (F)	CHD1JK30B103	4835 122 87255
C501		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C502		CHIP CERAMIC CAP.(1608) 0.022µF/50V +80/-20% (F) or	CHD1JK30B223	4835 122 87209
		CHIP CERAMIC CAP.(1608) 0.022µF/25V +80/-20% (F)	CHD1EK30B223	4835 122 87152
C504		ELECTROLYTIC CAP. 220µF/6.3V ±20% H7	CE0KMASSL221	4835 124 47186
●C506		CHIP CERAMIC CAP.(MELF) 18pF/50V ±5% (SL) or	CZM1JJ3SL180	4835 122 87664
		CHIP CERAMIC CAP. 18pF/50V ±5% (CH) or	CHD1JJ3CH180	4835 122 87143
		CHIP CERAMIC CAP. 18pF/50V ±5% (CG)	CHD1JJ3CG180	4835 122 87143
●C508		CHIP CERAMIC CAP. 27pF/50V ±5% (CH) or	CHD1JJ3CH270	4835 122 87029
		CHIP CERAMIC CAP. 27pF/50V ±5% (CG)	CHD1JJ3CG270	4835 122 87029
C510		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
●C512		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
C513		ELECTROLYTIC CAP. 47µF/25V ±20% H7	CE1EMAVSL470	4835 124 47084
●C515		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C516		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C518		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
●C520		CHIP CERAMIC CAP.(1608) 0.047µF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047µF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
●C523		CHIP CERAMIC CAP.(1608) 0.022µF/50V ±10% (B) or	CHD1JK30B223	4835 122 87209
		CHIP CERAMIC CAP.(1608) 0.022µF/25V ±10% (B)	CHD1EK30B223	4835 122 87152
C524		ELECTROLYTIC CAP. 1µF/50V ±20% H7	CE1JMAVSL1R0	4835 124 47014
C525		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C527		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C529		ELECTROLYTIC CAP. 47µF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C530		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C531		ELECTROLYTIC CAP. 22µF/10V ±20% H7	CE1AMAVSL220	4835 124 47307
●C533		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C535		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153

Ref. No.	⚠	Description	ID No.	Part No.
●C538		CHIP CERAMIC CAP.(MELF) 0.01µF/16V +80/-20% (F)	CZM1CZ30F103	4835 122 87647
C543		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
C545		ELECTROLYTIC CAP. 22µF/50V ±20% H7	CE1JMASSL220	4835 124 97073
●C551		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C552		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
C554		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C556		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C557		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
●C558		CHIP CERAMIC CAP.(1608) 0.1µF/50V +80/-20% (F) or	CHD1JZ30F104	4835 122 87645
		CHIP CERAMIC CAP.(1608) 0.1µF/25V +80/-20% (F) or	CHD1EZ30F104	4835 122 87213
		CHIP CERAMIC CAP. 0.1µF/50V +80/-20% (FZ)	CHD1JZ3FZ104	4835 122 87645
●C559		CHIP CERAMIC CAP.(1608) 4700pF/50V ±10% (B)	CHD1JK30B472	4835 122 87326
C561		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C563		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
C565		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C567		ELECTROLYTIC CAP. 470µF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470µF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C570		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C571		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C573		CERAMIC CAP.(AX) 0.1µF/50V +80/-20% (F)	CCA1JZTFZ104	4835 122 47731
C574		CERAMIC CAP.(AX) 0.1µF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
C575		ELECTROLYTIC CAP. 100µF/6.3V H7	CE0KMAVSL101	4835 124 47127
C577		METALIZED PLYESTER CAP. 1µF/100V ±5%	CT2A105MS065	9965 000 25443
C578		METALIZED PLYESTER CAP. 1µF/100V ±5%	CT2A105MS065	9965 000 25443
C579		CERAMIC CAP.(AX) 1000pF/50V ±10% (B)	CCA1JKT0B102	4835 122 47004
●C582		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C583		CERAMIC CAP.(AX) 0.1µF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
●C584		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C586		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
●C587		CHIP CERAMIC CAP.(1608) 1µF/10V ±10% (B)	CHD1AK30B105	4835 122 87639
C589		CERAMIC CAP.(AX) 0.1µF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
C591		ELECTROLYTIC CAP. 100µF/10V ±20% H7	CE1AMAVSL101	4822 124 40178
C592		ELECTROLYTIC CAP. 470µF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470µF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C593		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
●C594		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C595		CHIP CERAMIC CAP.(1608) 0.1µF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1µF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C596		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C597		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C598		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C599		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C600		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
●C601		CHIP CERAMIC CAP.(1608) 0.01µF/50V ±10% (B)	CHD1JK30B103	4835 122 87255

Ref. No.	⚠	Description	ID No.	Part No.
●C602		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C603		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C605		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C606		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C607		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C608		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C609		CHIP CERAMIC CAP.(1608) 68pF/50V ±5% (CH) or	CHD1JJ3CH680	4835 122 87057
		CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1JJ3CG680	4835 122 87057
●C610		CHIP CERAMIC CAP.(1608) 68pF/50V ±5% (CH) or	CHD1JJ3CH680	4835 122 87057
		CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1JJ3CG680	4835 122 87057
●C611		CHIP CERAMIC CAP.(1608) 68pF/50V ±5% (CH) or	CHD1JJ3CH680	4835 122 87057
		CHIP CERAMIC CAP. 68pF/50V ±5% (CG)	CHD1JJ3CG680	4835 122 87057
●C612		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
●C1351		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
C1352		ELECTROLYTIC CAP. 47μF/6.3V ±20% H7	CE0KMAVSL470	4835 124 47265
●C1354		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5% (CG)	CHD1JJ3CG101	4835 122 87193
●C1358		CHIP CERAMIC CAP. 9pF/50V ±0.5% (CH)	CHD1JD3CH9R0	4835 122 87433
●C1359		CHIP CERAMIC CAP. 9pF/50V ±0.5% (CH)	CHD1JD3CH9R0	4835 122 87433
●C1360		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
●C1361		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
●C1362		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
●C1363		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
●C1364		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
CONNECTORS				
CN204		FFC/FPC CONNECTOR, 7P 00-6232-007-006-800 or	JC62G07TM010	---- --- -----
		FMN CONNECTOR, TOP 7P 07FMN-BTK	JCFNG07JG001	---- --- -----
CN205		FFC/FPC CONNECTOR, 8P 00-6232-008-006-800 or	JC62G08TM010	---- --- -----
		FMN CONNECTOR, TOP 8P 08FMN-BTRK	JCFNG08JG002	---- --- -----
CN207		CONNECTOR BASE 4P B4B-XH-A	J3XHC04JG007	---- --- -----
CN208		CONNECTOR BASE, TOP 12P B12B-PH-K-S	J3PHC12JG001	---- --- -----
CN209		CONNECTOR BASE, 9P TUC-P09P-B1	J3TUA09TG001	---- --- -----
CN210		CONNECTOR BASE, 9P TUC-P09P-B1	J3TUA09TG001	---- --- -----

Ref. No.	⚠	Description	ID No.	Part No.
CN211		FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or	JC62G22TM010	---- --- -----
		FMN CONNECTOR, TOP 22P 22FMN-BTRK	JCFNG22JG002	---- --- -----
CN212		FMN CONNECTOR, TOP 7P 07FMN-BTRK	JCFNG07JG002	---- --- -----
CN213		FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or	JC62G22TM010	---- --- -----
		FMN CONNECTOR, TOP 22P 22FMN-BTRK	JCFNG22JG002	---- --- -----
CN214		FFC/FPC CONNECTOR, 13P 00-6232-013-006-800 or	JC62G13TM010	---- --- -----
		FMN CONNECTOR, TOP 13P 13FMN-BTK	JCFNG13JG001	---- --- -----
CN215		FFC/FPC CONNECTOR, 29P 00-6232-029-006-800 or	JC62G29TM010	---- --- -----
		FMN CONNECTOR, TOP 29P 29FMN-BTK-A	JCFNG29JG001	---- --- -----
CN216		FFC/FPC CONNECTOR, 22P 00-6232-022-006-800 or	JC62G22TM010	---- --- -----
		FMN CONNECTOR, TOP 22P 22FMN-BTRK	JCFNG22JG002	---- --- -----
DIODES				
D205		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D206		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D207		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D208		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D210		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D211		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D212		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D213		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D214		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D215		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D216		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D217		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D218		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D219		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D220		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D221		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D222		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D223		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D224		ZENER DIODE DZ-12BSBT265 or	NDTB00DZ12BS	9965 000 25451
		ZENER DIODE MTZJT-7712B	QDTB00MTZJ12	4835 130 37705
D225		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D226		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D228		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
D229		LED MIE-534A2 or	NPZZM1E534A2	4835 130 87168
		LED SIR-563ST3F P or	QPQPS1R563ST	4835 130 87163
		LED SIR-563ST3F Q	QPQQS1R563ST	4835 130 87162
D230		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
D233		SCHOTTKY BARRIER DIODE SB350	NDQZ000SB350	4835 130 38074
D237		ZENER DIODE DZ-10BSBT265 or	NDTB00DZ10BS	4835 130 38054
		ZENER DIODE MTZJT-7710B	QDTB00MTZJ10	4835 130 37956

Ref. No.	⚠	Description	ID No.	Part No.
D238		ZENER DIODE DZ-6.8BSCT265 or	NDTC0DZ6R8BS	4835 130 38027
		ZENER DIODE MTZJT-776.8C	QDTC0MTZJ6R8	4835 130 37881
D239		ZENER DIODE DZ-9.1BSCT265 or	NDTC0DZ9R1BS	4835 130 38028
		ZENER DIODE MTZJT-779.1C	QDTC0MTZJ9R1	4835 130 37506
D242		ZENER DIODE DZ-27BSDT265 or	NDTD00DZ27BS	9965 000 25454
		ZENER DIODE MTZJT-7727D	QDTD00MTZJ27	9965 000 25455
D243		RECTIFIER DIODE 1N4005 or	NDQZ001N4005	4835 130 37047
		RECTIFIER DIODE 1N4005	NDWZ001N4005	4835 130 37047
D247		ZENER DIODE DZ-18BSBT265 or	NDTB00DZ18BS	4835 130 38031
		ZENER DIODE MTZJT-7718B	QDTB00MTZJ18	4835 130 37784
D248		ZENER DIODE DZ-33BSDT265 or	NDTD00DZ33BS	4835 130 38061
		ZENER DIODE MTZJT-7733D	QDTD00MTZJ33	4835 130 37694
D250		ZENER DIODE DZ-3.6BSBT265 or	NDTB0DZ3R6BS	9965 000 25456
		ZENER DIODE MTZJT-773.6B	QDTB0MTZJ3R6	4835 130 38076
ICS				
●IC201		IC, VIDEO SW STV6618	NSZBA0RSS221	9965 000 25458
●IC202		IC, SW NJM2285-TE1	QSZBA0TJR077	9965 000 25459
●IC203		IC, AUDIO SW TC4052BF(EL) or	QSZBA0TTS096	4835 209 47641
		IC, AUDIO SW BU4052BCF-E2 or	QSZBA0TRM024	4835 209 47639
		IC, AUDIO SW CD4052BCSJX or	NSZBA0TF3079	9965 000 23425
		IC, AUDIO SW CD4052BNSR	NSZBA0TTY091	4835 209 47638
●IC206		IC, AUDIO DAC UDA1334BTS	NSZBA0TPH026	9965 000 25460
●IC208		IC, OP AMP MC33078DR2	NSZBA0TN2004	4835 209 47637
●IC209		IC, OP AMP MC33078DR2	NSZBA0TN2004	4835 209 47637
●IC211		IC, SW NJM2285-TE1	QSZBA0TJR077	9965 000 25459
●IC212		IC, SW TC4053BF(EL.N) or	QSZBA0TTS131	4835 209 47549
		IC, SW BU4053BCF-E2 or	QSMDA0TRM010	CK31 992 R
		IC, SW CD4053BCSJX or	NSZBA0TF3071	4835 209 47611
		IC, SW CD4053BNSR	NSZBA0TTY093	4835 209 47611
●IC213		IC, SW TC4053BF(EL.N) or	QSZBA0TTS131	4835 209 47549
		IC, SW BU4053BCF-E2 or	QSMDA0TRM010	CK31 992 R
		IC, SW CD4053BCSJX or	NSZBA0TF3071	4835 209 47611
		IC, SW CD4053BNSR	NSZBA0TTY093	4835 209 47611
●IC218		IC, EEPROM CAT24WC02JI or	NSZBA0SBG001	4835 209 47596
		IC, EEPROM BR24L02F-WE2	QSZBA0TRM068	4835 209 47636
●IC221		IC, FIP DRIVER PT6313-S-TP	NSZBA0TG2006	9965 000 19575
IC225		IC, FIP 7-BT-300GN	TVFD1C0FT043	9965 000 25463
●IC226		IC, MTS/SAP/Hi-Fi AUDIO PROCESS/Hi-Fi HEAD AMP LA72670BM-MPB-E	QSZBA0RSY039	4835 209 47634
●IC227		IC, VIDEO/AUDIO/SIGNAL PROCESS/ HEAD AMP LA71205M-MPB-E	QSZBA0RSY037	4835 209 47629
●IC228		IC, SYSTEM CONTROL MICROPRO-CESSOR MN101D08DEG1	QSZAB0RMS027	9965 000 25464
●IC229		IC, +12V SWITCHING RTQ035N03 TR	QF2ZTQ035N03	9965 000 25465
●IC230		IC, -5V SWITCHING RTQ045N03 TR	QF2ZTQ045N03	9965 000 25466
IC231		IC, SHUNT REGULATOR KIA431A-AT or	NSZBA0TJY018	4835 209 47618
		IC, SHUNT REGULATOR TL431A-TA	NSZBA0TQ2003	4835 209 47621
IC232		IC, SHUNT REGULATOR KIA431A-AT or	NSZBA0TJY018	4835 209 47618
		IC, SHUNT REGULATOR TL431A-TA	NSZBA0TQ2003	4835 209 47621
IC233		IC, SHUNT REGULATOR KIA431A-AT or	NSZBA0TJY018	4835 209 47618
		IC, SHUNT REGULATOR TL431A-TA	NSZBA0TQ2003	4835 209 47621
●IC234		IC, AUDIO ADC UDA1361TS	NSZBA0TPH025	9965 000 25468
COILS				
L205		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L206		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L207		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L208		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L210		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L211		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L214		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L215		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L217		INDUCTOR(100μH K) LAP02TA101K	LLAXKATTU101	4835 157 57369
L218		CHOKE COIL 47μH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47μH-K or	LLBD00PKV005	4835 157 58208
		CHOKE COIL 47μH-K	LLBD00PKT001	4835 157 58208
L220		INDUCTOR 47μH-K-5FT	LLARKBSTU470	4835 157 57375
L221		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L222		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L224		CHOKE COIL 47μH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47μH-K or	LLBD00PKV005	4835 157 58208

Ref. No.	⚠	Description	ID No.	Part No.
		CHOKE COIL 47μH-K	LLBD00PKT001	4835 157 58208
L226		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L227		INDUCTOR(100μH K) LAP02TA101K	LLAXKATTU101	4835 157 57369
●L228		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
L1351		INDUCTOR(0.47μH K) LAP02TAR47K	LLAXKATTUR47	4835 157 58018
TRANSISTORS				
Q201		MUTE-CTL BC547-B-AT	NQSB000BC547	9965 000 25523
Q202		MUTE-CTL BC557-B-AT	NQSB000BC557	9965 000 25473
Q203		P-ON RESET KRA303-RTK "PNP"	NQ1Z00KRA303	9965 000 25474
Q204		AUDIO MUTE BC337-25-AT	NQS8000BC337	9965 000 25475
Q205		AUDIO MUTE BC337-25-AT	NQS8000BC337	9965 000 25475
Q206		P-ON RESET BC557-B-AT	NQSB000BC557	9965 000 25473
Q207		AMP BC547-B-AT	NQSB000BC547	9965 000 25523
Q208		AMP BC557-B-AT	NQSB000BC557	9965 000 25473
Q209		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q210		SWITCHING BC557-B-AT	NQSB000BC557	9965 000 25473
Q213		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q214		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q215		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q216		MUTE-ON KRC103M "NPN" or	NQSZ0KRC103M	4835 130 47909
		MUTE-ON BA1F4M-T	QQSZ00BA1F4M	4835 130 48204
Q217		MUTE-ON KRC103M "NPN" or	NQSZ0KRC103M	4835 130 47909
		MUTE-ON BA1F4M-T	QQSZ00BA1F4M	4835 130 48204
Q218		MUTE-ON KRC103M "NPN" or	NQSZ0KRC103M	4835 130 47909
		MUTE-ON BA1F4M-T	QQSZ00BA1F4M	4835 130 48204
Q219		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q220		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q221		INVERTER BC557-B-AT	NQSB000BC557	9965 000 25473
Q222		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q223		BUFFER BC547-B-AT	NQSB000BC547	9965 000 25523
Q224		BUFFER BC557-B-AT	NQSB000BC557	9965 000 25473
Q226		SWITCHING KTA1266(GR) "PNP" or	NQS40KTA1266	4835 130 47422
		SWITCHING 2SA1015-GR(TPE2) "PNP"	QQS102SA1015	4835 130 47399
Q227		BIAS OSC KTC3203(Y) "NPN" or	NQSY0KTC3203	4835 130 48126
		BIAS OSC 2SC2120-Y(TPE2) "NPN"	QQSY02SC2120	4835 130 48047
Q228		SWITCHING D-REC-OFF KRA103M "PNP" or	NQSZ0KRA103M	4835 130 47907
		SWITCHING D-REC-OFF BN1F4M-T	QQSZ00BN1F4M	4835 130 48201
●Q229		SWITCHING PB-ON RN1511(TE85R) or	QQ2Z00RN1511	9965 000 12361
		SWITCHING PB-ON FMG4A T148	QQ2Z000FMG4A	9965 000 16623
Q231		RESET KRC108M "NPN"	NQSZ0KRC108M	4835 130 48057
Q232		BUFFER KTA1266(GR) "PNP" or	NQS40KTA1266	4835 130 47422
		BUFFER 2SA1015-GR(TPE2) "PNP"	QQS102SA1015	4835 130 47399
Q233		BUFFER KTC3193(Y) "NPN"	NQSY0KTC3193	4835 130 48016
Q235		RESET KTA1267(Y) "PNP" or	NQSY0KTA1267	4835 130 47913
		RESET KTA1267(GR) "PNP" or	NQS10KTA1267	4835 130 47913
		RESET 2SA1175(J) "PNP" or	QQSJ02SA1175	4835 130 47645
		RESET 2SA1175(H) "PNP" or	QQSH02SA1175	4835 130 47645
		RESET 2SA1175(F) "PNP"	QQSF02SA1175	4835 130 47645
Q240		TAKEUP REEL SENSOR PT204-6B-12 or	NPWZT2046B12	4835 130 48222
		TAKEUP REEL SENSOR MID-32A22F	NPWZ1D32A22F	4835 130 48231
Q242		LED DRIVE KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		LED DRIVE 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		LED DRIVE 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
Q243		LED DRIVE KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		LED DRIVE 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		LED DRIVE 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
Q245		LED DRIVE KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		LED DRIVE 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		LED DRIVE 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
Q246		-FL SWITCHING BC557-B-AT	NQSB000BC557	9965 000 25473
Q247		SWITCHING KRC103M "NPN" or	NQSZ0KRC103M	4835 130 47909
		SWITCHING BA1F4M-T	QQSZ00BA1F4M	4835 130 48204
Q248		SWITCHING BC547-B-AT	NQSB000BC547	9965 000 25523
Q250		SWITCHING BC547-B-AT	NQSB000BC547	9965 000 25523
Q251		SWITCHING KRC103M "NPN" or	NQSZ0KRC103M	4835 130 47909
		SWITCHING BA1F4M-T	QQSZ00BA1F4M	4835 130 48204
Q252		+5V SWITCHING 2SK2095N	QFWZ2SK2095N	9965 000 25476
Q253		+9V SWITCHING KTC3198(Y) "NPN" or	NQSY0KTC3198	4835 130 47946

Ref. No.	⚠	Description	ID No.	Part No.
		+9V SWITCHING KTC3198(GR) "NPN" or	NQS40KTC3198	4835 130 47946
		+9V SWITCHING 2SC536NF-NPA-AT "NPN" or	QQSFC536NNPA	4835 130 48202
		+9V SWITCHING 2SC536NG-NPA-AT "NPN"	QQSGC536NNPA	4835 130 48203
Q255		+8V REG. BC546-B-AT	NQSB000BC546	9965 000 25477
Q256		P-ON+5V SWITCHING KTC3203(Y) "NPN" or	NQSY0KTC3203	4835 130 48126
		P-ON+5V SWITCHING 2SC2120-Y(TPE2) "NPN"	QQSY02SC2120	4835 130 48047
Q257		+3V REG. KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		+3V REG. 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		+3V REG. 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
Q258		+3.3V SWITCHING RSS090N03L02TB	QF2Z90N03L02	9965 000 25478
Q260		+5V SWITCHING RSS090N03L02TB	QF2Z90N03L02	9965 000 25478
Q261		BUFFER KTA1266(GR) "PNP" or	NQS40KTA1266	4835 130 47422
		BUFFER 2SA1015-GR(TPE2) "PNP"	QQS102SA1015	4835 130 47399
Q1351		AMP KTC3199(BL) "NPN" or	NQS50KTC3199	4835 130 47914
		AMP 2SC2785(K) "NPN" or	QQSK02SC2785	4835 130 47722
		AMP 2SC1815-BL(TPE2) "NPN"	QQS202SC1815	4835 130 47358
RESISTORS				
●R201		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R202		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R203		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R204		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R205		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R206		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R207		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R208		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R209		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R210		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R211		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R212		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R213		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R214		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R215		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R216		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R217		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R218		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R219		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R220		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R221		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R222		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●R224		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R225		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R227		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R229		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R230		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R232		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R234		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R235		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R236		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R238		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R239		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R241		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R242		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R244		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R246		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R247		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R248		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R250		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R252		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R254		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R255		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R256		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R257		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
R259		CARBON RES. 1/6W 470 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167
●R260		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R261		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R263		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432

Ref. No.	⚠	Description	ID No.	Part No.
●R264		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R266		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R267		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R268		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R270		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R271		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R272		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R280		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R282		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R284		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R286		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R287		CHIP RES.(1608) 1/10W 2.2 Ω ±5%	RRXAJR5Z02R2	4835 111 17648
●R288		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R289		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R290		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R292		CHIP RES.(1608) 1/10W 180 Ω ±5%	RRXAJR5Z0181	4835 111 17509
●R293		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R294		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R296		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R297		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R298		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R299		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R300		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R302		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R303		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R304		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R306		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R308		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R310		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R312		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R313		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R314		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R315		CHIP RES.(1608) 1/10W 150k Ω ±5%	RRXAJR5Z0154	4835 111 37419
●R316		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R318		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R319		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R320		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
R322		CARBON RES. 1/6W 1 Ω ±5% or	RCX6JATZ01R0	4835 110 57216
		CARBON RES. 1/4W 1 Ω ±5%	RCX4JATZ01R0	4835 110 57229
●R323		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R324		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R326		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R327		CHIP RES.(1608) 1/10W 1 Ω ±5%	RRXAJR5Z01R0	4835 111 17647
●R334		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R335		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R337		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R338		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R339		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R340		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R342		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R343		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R345		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R347		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R349		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R350		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R351		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R353		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R354		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R355		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R357		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R358		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R359		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R360		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R362		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R363		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R365		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R366		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R368		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R369		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334

Ref. No.	⚠	Description	ID No.	Part No.
●R370		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R372		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R373		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R375		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R376		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R377		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R379		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R380		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
●R383		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R385		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R386		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R387		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R388		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R390		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R392		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R393		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R394		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R395		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R397		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R404		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R405		CHIP RES.(1608) 1/10W 100k Ω ±2%	RRXAGR5Z0104	4835 111 37416
●R406		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R410		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R411		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R413		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R414		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R415		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R416		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R419		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R423		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R424		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R425		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R426		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R427		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R428		CHIP RES.(1608) 1/10W 2.7k Ω ±5%	RRXAJR5Z0272	4835 111 37243
●R429		CHIP RES.(1608) 1/10W 39k Ω ±5%	RRXAJR5Z0393	4835 111 37255
●R430		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R432		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R433		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R434		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R435		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R437		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R438		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R439		CHIP RES.(1608) 1/10W 15k Ω ±5%	RRXAJR5Z0153	4835 111 37458
●R440		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R442		CHIP RES.(1608) 1/10W 15k Ω ±5%	RRXAJR5Z0153	4835 111 37458
●R443		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R444		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R447		CHIP RES.(1608) 1/10W 1.2k Ω ±5%	RRXAJR5Z0122	4835 111 37222
●R450		CHIP RES.(1608) 1/10W 3.9M Ω ±5%	RRXAJR5Z0395	4835 111 17518
●R451		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R453		CHIP RES.(1608) 1/10W 82k Ω ±5%	RRXAJR5Z0823	4835 111 17173
●R455		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R456		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJR5Z0472	4835 111 37426
●R457		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R460		CHIP RES.(1608) 1/10W 680k Ω ±5%	RRXAJR5Z0684	4835 111 17414
●R462		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R463		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R465		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R466		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R468		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R469		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R470		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R472		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R473		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R474		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R476		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R477		CHIP RES. 1/10W 1.2k Ω ±5% or	RRXAFR5H1201	4835 111 17394
		CHIP RES.(1608) 1/10W 1.2k Ω ±1%	RRXAFR5Z1201	4835 111 17394

Ref. No.	⚠	Description	ID No.	Part No.
●R479		CHIP RES.(1608) 1/10W 6.8k Ω ±5%	RRXAJR5Z0682	4835 111 37272
●R480		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R482		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R483		CHIP RES.(1608) 1/10W 12k Ω ±5%	RRXAJR5Z0123	4835 111 17148
●R484		CHIP RES.(1608) 1/10W 330k Ω ±5%	RRXAJR5Z0334	4835 111 17404
●R485		CHIP RES.(1608) 1/10W 120 Ω ±5%	RRXAJR5Z0121	4835 111 17069
●R487		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R488		CHIP RES.(1608) 1/10W 910 Ω ±5%	RRXAJR5Z0911	4835 111 37337
●R489		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R490		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R492		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R493		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
R495		CARBON RES. 1/6W 47k Ω ±5% or	RCX6JATZ0473	4835 110 57189
		CARBON RES. 1/4W 47k Ω ±5%	RCX4JATZ0473	4835 110 57189
R496		CARBON RES. 1/6W 100 Ω ±5% or	RCX6JATZ0101	4835 111 37161
		CARBON RES. 1/4W 100 Ω ±5%	RCX4JATZ0101	4835 110 57003
R497		CARBON RES. 1/6W 820 Ω ±5% or	RCX6JATZ0821	4835 110 57059
		CARBON RES. 1/4W 820 Ω ±5%	RCX4JATZ0821	4835 110 57059
●R499		CHIP RES.(1608) 1/10W 1.5k Ω ±5%	RRXAJR5Z0152	4835 111 37437
●R500		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R502		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R505		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R512		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R513		CHIP RES.(1608) 1/10W 3.3k Ω ±5%	RRXAJR5Z0332	4835 111 17162
●R514		CHIP RES.(1608) 1/10W 39k Ω ±5%	RRXAJR5Z0393	4835 111 37255
●R517		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R518		CHIP RES.(1608) 1/10W 220k Ω ±5%	RRXAJR5Z0224	4835 111 37235
●R521		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R522		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R523		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R524		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R525		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R526		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
R527		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R528		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●R529		CHIP RES.(1608) 1/10W 4.7k Ω ±1% or	RRXAFR5H4701	4835 111 37426
		CHIP RES.(1608) 1/10W 4.7k Ω ±1%	RRXAFR5Z4701	4835 111 37426
●R530		CHIP RES.(1608) 1/10W 1.5k Ω ±1% or	RRXAFR5H1501	4835 111 17152
		CHIP RES.(1608) 1/10W 1.5k Ω ±1%	RRXAFR5Z1501	4835 111 17152
●R531		CHIP RES.(1608) 1/10W 22k Ω ±1% or	RRXAFR5H2202	4835 111 17383
		CHIP RES.(1608) 1/10W 22k Ω ±1%	RRXAFR5Z2202	4835 111 17287
●R532		CHIP RES.(1608) 1/10W 470 Ω ±1% or	RRXAFR5H4700	4835 111 17165
		CHIP RES.(1608) 1/10W 470 Ω ±1%	RRXAFR5Z4700	4835 111 17165
●R533		CHIP RES.(1608) 1/10W 10k Ω ±1% or	RRXAFR5H1002	4835 111 27027
		CHIP RES.(1608) 1/10W 10k Ω ±1%	RRXAFR5Z1002	4835 111 27027
●R534		CHIP RES.(1608) 1/10W 3.6k Ω ±1% or	RRXAFR5H3601	4835 111 17486
		CHIP RES.(1608) 1/10W 3.6k Ω ±1%	RRXAFR5Z3601	4835 111 17486
●R535		CHIP RES.(1608) 1/10W 33k Ω ±5%	RRXAJR5Z0333	4835 111 37248
●R538		CHIP RES.(1608) 1/10W 390k Ω ±5%	RRXAJR5Z0394	4835 111 37256
●R539		CHIP RES.(1608) 1/10W 390k Ω ±5%	RRXAJR5Z0394	4835 111 37256
R540		CARBON RES. 1/4W 270 Ω ±5%	RCX4JATZ0271	4835 110 57041
R541		CARBON RES. 1/6W 4.7k Ω ±5% or	RCX6JATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±5%	RCX4JATZ0472	4835 110 57051
●R542		CHIP RES.(1608) 1/10W 18k Ω ±5%	RRXAJR5Z0183	4835 111 37232
●R543		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R544		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
R547		CARBON RES. 1/6W 150 Ω ±5% or	RCX6JATZ0151	4835 111 37167
		CARBON RES. 1/4W 150 Ω ±5%	RCX4JATZ0151	4835 110 57031
●R548		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R549		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R550		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R553		CHIP RES.(1608) 1/10W 3.9k Ω ±5%	RRXAJR5Z0392	4835 111 37254
●R556		CHIP RES.(1608) 1/10W 5.1k Ω ±5%	RRXAJR5Z0512	4835 111 37264
●R557		CHIP RES.(1608) 1/10W 5.1k Ω ±5%	RRXAJR5Z0512	4835 111 37264
●R558		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R559		CHIP RES.(1608) 1/10W 8.2k Ω ±5%	RRXAJR5Z0822	4835 111 37448
●R561		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R565		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R567		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216

Ref. No.	⚠	Description	ID No.	Part No.
●R569		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R571		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R572		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R574		CHIP RES.(1608) 1/10W 6.8k Ω ±5%	RRXAJR5Z0682	4835 111 37272
R576		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●R577		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R578		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R579		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●R580		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R582		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R583		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R584		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
●R586		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R588		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R590		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R591		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
●R593		CHIP RES.(1608) 1/10W 270 Ω ±5%	RRXAJR5Z0271	4835 111 37424
R594		CARBON RES. 1/6W 220 Ω ±5% or	RCX6JATZ0221	4835 111 37175
		CARBON RES. 1/4W 220 Ω ±5%	RCX4JATZ0221	4835 110 57037
●R595		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R596		CARBON RES. 1/6W 8.2k Ω ±2% or	RCX6GATZ0822	4835 111 37209
		CARBON RES. 1/4W 8.2k Ω ±2%	RCX4GATZ0822	4835 110 57264
R597		CARBON RES. 1/6W 1k Ω ±2% or	RCX6GATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±2%	RCX4GATZ0102	4835 110 57195
R598		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R599		CARBON RES. 1/6W 3.3k Ω ±5% or	RCX6JATZ0332	4835 111 37185
		CARBON RES. 1/4W 3.3k Ω ±5%	RCX4JATZ0332	4835 110 57046
R600		CARBON RES. 1/6W 100k Ω ±5% or	RCX6JATZ0104	4835 110 57068
		CARBON RES. 1/4W 100k Ω ±5%	RCX4JATZ0104	4835 110 57185
R601		CARBON RES. 1/6W 220k Ω ±5% or	RCX6JATZ0224	4835 110 57208
		CARBON RES. 1/4W 220k Ω ±5%	RCX4JATZ0224	4835 110 57208
R602		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R603		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R604		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R605		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R606		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R607		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R608		CARBON RES. 1/6W 68k Ω ±5% or	RCX6JATZ0683	4835 111 37205
		CARBON RES. 1/4W 68k Ω ±5%	RCX4JATZ0683	4835 110 57168
R609		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R611		CARBON RES. 1/4W 10k Ω ±5%	RCX4JATZ0103	4835 110 57026
R612		CARBON RES. 1/6W 10 Ω ±5% or	RCX6JATZ0100	4835 111 37159
		CARBON RES. 1/4W 10 Ω ±5%	RCX4JATZ0100	4835 110 57002
R613		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R614		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R615		CARBON RES. 1/6W 47k Ω ±5% or	RCX6JATZ0473	4835 110 57189
		CARBON RES. 1/4W 47k Ω ±5%	RCX4JATZ0473	4835 110 57189
R616		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R617		CARBON RES. 1/6W 220 Ω ±5% or	RCX6JATZ0221	4835 111 37175
		CARBON RES. 1/4W 220 Ω ±5%	RCX4JATZ0221	4835 110 57037
R618		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R619		CARBON RES. 1/6W 4.7k Ω ±2% or	RCX6GATZ0472	4835 111 37194
		CARBON RES. 1/4W 4.7k Ω ±2%	RCX4GATZ0472	4835 110 57278
R620		CARBON RES. 1/6W 68k Ω ±5% or	RCX6JATZ0683	4835 111 37205
		CARBON RES. 1/4W 68k Ω ±5%	RCX4JATZ0683	4835 110 57168
R622		CARBON RES. 1/6W 33 Ω ±5% or	RCX6JATZ0330	4835 111 17451
		CARBON RES. 1/4W 33 Ω ±5%	RCX4JATZ0330	4835 110 57044
R623		CARBON RES. 1/6W 47 Ω ±5% or	RCX6JATZ0470	4835 111 37192
		CARBON RES. 1/4W 47 Ω ±5%	RCX4JATZ0470	4835 110 57019
R624		CARBON RES. 1/6W 33 Ω ±5% or	RCX6JATZ0330	4835 111 17451
		CARBON RES. 1/4W 33 Ω ±5%	RCX4JATZ0330	4835 110 57044
R625		CARBON RES. 1/6W 470 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167

Ref. No.	⚠	Description	ID No.	Part No.
R626		CARBON RES. 1/6W 470 Ω ±5% or	RCX6JATZ0471	4835 111 37193
		CARBON RES. 1/4W 470 Ω ±5%	RCX4JATZ0471	4835 110 57167
R627		CARBON RES. 1/6W 680 Ω ±5% or	RCX6JATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±5%	RCX4JATZ0681	4835 110 57054
R628		CARBON RES. 1/6W 680 Ω ±5% or	RCX6JATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±5%	RCX4JATZ0681	4835 110 57054
R629		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R630		CARBON RES. 1/6W 150 Ω ±5% or	RCX6JATZ0151	4835 111 37167
		CARBON RES. 1/4W 150 Ω ±5%	RCX4JATZ0151	4835 110 57031
R660		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
R662		CARBON RES. 1/4W 8.2k Ω ±5%	RCX4JATZ0822	4835 110 57264
R663		CARBON RES. 1/4W 8.2k Ω ±5%	RCX4JATZ0822	4835 110 57264
R664		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
R665		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
R666		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●R667		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
R668		CARBON RES. 1/4W 22 Ω ±5%	RCX4JATZ0220	4835 110 57036
R669		CARBON RES. 1/4W 22 Ω ±5%	RCX4JATZ0220	4835 110 57036
R671		CARBON RES. 1/6W 100 Ω ±5% or	RCX6JATZ0101	4835 111 37161
		CARBON RES. 1/4W 100 Ω ±5%	RCX4JATZ0101	4835 110 57003
R672		CARBON RES. 1/6W 1.5k Ω ±5% or	RCX6JATZ0152	4835 111 37306
		CARBON RES. 1/4W 1.5k Ω ±5%	RCX4JATZ0152	4835 110 57186
R673		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
●R675		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R687		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R688		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R689		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R690		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R691		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R692		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R693		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R695		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
R696		CARBON RES. 1/4W 560 Ω ±5%	RCX4JATZ0561	4835 110 57052
R697		CARBON RES. 1/4W 560 Ω ±5%	RCX4JATZ0561	4835 110 57052
●R698		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R699		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
R700		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R701		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025
R702		CARBON RES. 1/6W 1M Ω ±5% or	RCX6JATZ0105	4835 110 57272
		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
●R1351		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R1352		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R1353		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R1354		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
●R1355		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R1356		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R1357		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
SWITCHES				
SW201		LEAF SWITCH MXS01830MVP0	SSC0101MCE03	4835 276 17354
SW202		ROTARY MODE SWITCH SSS-53MD	SSR0106KB003	4835 276 17357
SW203		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
MISCELLANEOUS				
2B16		BUSH, LED(F)	0VM409508	---- --- -----
2B17		SHIELD ASSEMBLY	0VM413279	---- --- -----
2B40		HOLDER, F.I.P.	0VM416304	---- --- -----
F201		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
F202		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
F203		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
F204		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
F205		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
F206		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
FM1001		DC FAN MOTOR 2410-RL-04W-B20-C02	MMEZR12NM004	9965 000 25457
J31		CARBON RES. 1/6W 1k Ω ±5% or	RCX6JATZ0102	4835 111 37162
		CARBON RES. 1/4W 1k Ω ±5%	RCX4JATZ0102	4835 110 57025

Ref. No.	⚠	Description	ID No.	Part No.
J373		CERAMIC CAP.(AX) 1000pF/50V ±10% (B)	CCA1JKT0B102	4835 122 47004
J378		CERAMIC CAP.(AX) 0.1μF/25V ±10% (B)	CCA1EKT0B104	4835 122 47682
●JC1		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC05		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC106		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC107		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC101		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC102		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC103		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC104		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC114		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC116		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC117		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC118		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC119		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
●JC121		CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000	4835 111 37215
JK201		S TYPE JACK(2P) MDC-021V-AA LF	JYEL040LY004	9965 000 25469
JK202		RCA JACK MSP-382V-12 PBSN	JXRL020LY063	9965 000 15321
JK203		RCA JACK 3P MSP-213-V1-432 PBSN	JXRL030LY048	4835 265 97523*
JK204		RCA JACK(BLACK) MSP-281V2-B	JXRL010LY062	4835 265 97515
JK205		RCA JACK MSP-382V-12 PBSN	JXRL020LY063	9965 000 15321
JK207		RCA JACK 3P MSP-213-V1-432 PBSN	JXRL030LY048	4835 265 97523*
JK208		RCA JACK MSP-213V1-652 PBSN or	JXRL030LY061	4835 265 97516
		RCA JACK MSP-213V1-652-B NI L	JXRL030LY116	4835 265 97516
JK210		RCA JACK MSP-213V1-652 PBSN or	JXRL030LY061	4835 265 97516
		RCA JACK MSP-213V1-652-B NI L	JXRL030LY116	4835 265 97516
RM201		INFRARED RECEIVER MODULE MIM-93M6EKF	USESJRSUNT08	9965 000 25479
TP204		PCB JUMPER D0.6-P5.5	JW5.5T	---- --- -----
TP205		PCB JUMPER D0.6-P10.0	JW10.0T	---- --- -----
TP301		PCB JUMPER D0.6-P20.0	JW20.0T	---- --- -----
TP302		PCB JUMPER D0.6-P10.0	JW10.0T	---- --- -----
TP452		PCB JUMPER D0.6-P21.5	JW21.5T	---- --- -----
TP506		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
TP507		PCB JUMPER D0.6-P25.0	JW25.0T	---- --- -----
TP513		PCB JUMPER D0.6-P7.5	JW7.5T	---- --- -----
TP751		PCB JUMPER D0.6-P10.0	JW10.0T	---- --- -----
TU201		TUNER VH025AG	UTUNNTUSP028	9965 000 25480
VR201		CARBON P.O.T. 100k Ω B	VRCB104HH014	4835 100 97191
W003		PARALLEL WIRE, 5P AWG26#2651/P2.0/140	WX1E9480-003	---- --- -----
W004		FFC CABLE 7P FFC/P1.00/100	WX1E9480-004	---- --- -----
W005		FFC CABLE 7P FFC/P1.00/220	WX1E9480-005	---- --- -----
W006		FFC CABLE 8P FFC/P1.00/150	WX1E9480-006	---- --- -----
W008		FFC CABLE 13P FFC/P1.00/100	WX1E9480-008	---- --- -----
W010		FFC CABLE 22P FFC/P1.00/120	WX1E9480-010	---- --- -----
W011		FFC CABLE 22P FFC/P1.00/250	WX1E9480-011	---- --- -----
W013		WIRE ASSEMBLY 12P UL1007 AWG26/120	WX1E9480-013	---- --- -----
W014		WIRE ASSEMBLY 4P UL1007 AWG22/120	WX1E9480-014	9965 000 25487
W020		WIRE 1P WIRE 1P AWG26 /90	WX1E9480-020	---- --- -----
X201		CRYSTAL OSCILLATOR 14.31818MHZ or	FXD146LDS003	4835 242 77305
		CRYSTAL OSCILLATOR 14.31M(20/15/50/49S)	FXC146LLN004	4835 242 77305
X202		CRYSTAL OSCILLATOR 3.579545MHz(20PPM) or	FXC355LLN003	4835 242 77093
		CRYSTAL OSCILLATOR 3.579545MHz(20PPM) or	FXC355LCHE01	4835 242 77093
		CRYSTAL OSCILLATOR 3.579545MHz(20PPM)	FXC355LDS001	4835 242 77093

FUNCTION CBA

Ref. No.	⚠	Description	ID No.	Part No.
		FUNCTION CBA (MCV-B) Consists of the following:	---------	
DIODES				
D951		LED(YELLOW) 204YD/E	NPQZ00204YDE	4835 130 87169
D952		LED(YELLOW) 204YD/E	NPQZ00204YDE	4835 130 87169
RESISTORS				
●R951		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
●R952		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R953		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
SWITCHES				
SW951		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW952		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356

SENSOR CBA

Ref. No.	⚠	Description	ID No.	Part No.
		SENSOR CBA Consists of the following:	1VSA10578	9965 000 14801
TRANSISTORS				
Q236		PHOTO TRANSISTOR PT204-6B-12 or	NPWZT2046B12	4835 130 48222
		PHOTO TRANSISTOR MID-32A22F	NPWZ1D32A22F	4835 130 48231
Q238		PHOTO TRANSISTOR PT204-6B-12 or	NPWZT2046B12	4835 130 48222
		PHOTO TRANSISTOR MID-32A22F	NPWZ1D32A22F	4835 130 48231

PSV CBA

Ref. No.	⚠	Description	ID No.	Part No.
		PSV CBA Consists of the following:	1VSA10556	9965 000 25435
		POWER SUPPLY CBA (PSV-A) JUNCTION-A CBA (PSV-B) JUNCTION-B CBA (PSV-C) FRONT CBA (PSV-D) JACK-A CBA (PSV-E) JACK-B CBA (PSV-G)	---------- ---------- ---------- ---------- ---------- ----------	

POWER SUPPLY CBA

Ref. No.	⚠	Description	ID No.	Part No.
		POWER SUPPLY CBA (PSV-A) Consists of the following:	----------	
CAPACITORS				
C1001		ELECTROLYTIC CAP. 10μF/50V ±20% H7	CE1JMASSL100	4835 124 47202
C1002		ELECTROLYTIC CAP. 1000μF/16V ±20% or	CE1CMZPDL102	4835 124 47005
		ELECTROLYTIC CAP. 1000μF/16V ±20%	CE1CMZPTL102	4835 124 47005
C1003		ELECTROLYTIC CAP. 10μF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C1004		ELECTROLYTIC CAP. 4700μF/6.3V ±20%	CE0KMZPTL472	4835 121 47192
C1005		ELECTROLYTIC CAP. 470μF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470μF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C1006		ELECTROLYTIC CAP. 470μF/6.3V ±20% or	CE0KMASDL471	4835 124 47239
		ELECTROLYTIC CAP. 470μF/6.3V ±20%	CE0KMASTL471	4835 124 47239
C1008		ELECTROLYTIC CAP. 22μF/50V ±20% or	CE1JMASDL220	4835 124 47051
		ELECTROLYTIC CAP. 22μF/50V ±20%	CE1JMASTL220	4835 124 47051
C1010		ELECTROLYTIC CAP. 1000μF/25V ±20% or	CE1EMZPDL102	4835 124 47007
		ELECTROLYTIC CAP. 1000μF/25V ±20%	CE1EMZPTL102	4835 124 47007
C1011		ELECTROLYTIC CAP. 470μF/10V ±20% or	CE1AMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470μF/10V ±20%	CE1AMASTL471	4835 124 47286
C1012		ELECTROLYTIC CAP. 100μF/10V ±20% H7	CE1AMASSL101	4835 124 47323
●C1013		CHIP CERAMIC CAP. 0.01μF/50V ±10% (B) or	CHD1JKB0B103	4835 122 87255
		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
C1014		CERAMIC CAP.(AX) 0.033μF/50V ±10% (B)	CA1J333TU011	4822 121 42772
C1015	⚠	METALLIZED FILM CAP. 0.068μF/275V ±10% or	CT2E683HJE14	4835 121 47725
	⚠	METALLIZED FILM CAP. 0.068μF/275V ±10% or	CT2E683HJE06	4835 121 47725
	⚠	METALLIZED FILM CAP. 0.068μF/250V ±10% or	CT2E683DC011	4835 121 47724
	⚠	METALLIZED FILM CAP. 0.068μF/250V ±20% or	CT2E683MS037	4835 121 47724

Ref. No.	⚠	Description	ID No.	Part No.
	⚠	METALLIZED FILM CAP. 0.068µF/275V ±10%	CT2E683DC015	4835 121 47725
C1016		CERAMIC CAP. 0.01µF/500V ±10% (B)	CCD2JKP0B103	4835 122 47423
C1017		ELECTROLYTIC CAP. 220µF/200V ±20%	CA2D221S6008	4835 124 47022
C1018		CERAMIC CAP. 120pF/500V ±10% (B)	CCD2JKP0B121	4835 122 47408
C1019	⚠	SAFETY CAP. 3300pF/250V or	CCG2EMA0F332	4835 125 97024
	⚠	SAFETY CAP. 3300pF/250V	CCD2EMA0E332	4835 125 97036
C1020		CERAMIC CAP. 220pF/500V ±10% (B)	CCD2JKP0B221	4835 122 47031
C1021		CERAMIC CAP.(AX) 3300pF/16V ±10% (X)	CCA1CKT0X332	4835 122 47475
C1022		CERAMIC CAP.(AX) 5600pF/16V ±10% (X)	CCA1CKT0X562	4835 122 47729
C1023		ELECTROLYTIC CAP. 10µF/16V ±20% H7	CE1CMAVSL100	4835 124 47268
C1024		CERAMIC CAP. 0.022µF/50V +80/-20% (YV)	CCD1JZSYV223	4835 122 47013
C1026		ELECTROLYTIC CAP. 470µF/16V ±20% or	CE1CMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470µF/16V ±20%	CE1CMASTL471	4835 220 17118
C1027		ELECTROLYTIC CAP. 470µF/16V ±20% or	CE1CMASDL471	4835 124 47286
		ELECTROLYTIC CAP. 470µF/16V ±20%	CE1CMASTL471	4835 220 17118
DIODES				
D1001		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1002		SCHOTTKY BARRIER DIODE SB390 or	NDQZ000SB390	9965 000 19668
		SCHOTTKY BARRIER DIODE SB390	NDWZ000SB390	9965 000 19668
D1003		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1004		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1005		ZENER DIODE DZ-15BSCT265 or	NDTC00DZ15BS	4835 130 38029
		ZENER DIODE MTZJT-7715C	QDTC00MTZJ15	4835 130 37595
D1006		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1007		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
D1008		SCHOTTKY BARRIER DIODE SB340 or	NDQZ000SB340	4835 130 37887
		SCHOTTKY BARRIER DIODE SB340	NDWZ000SB340	4835 130 37887
D1009		RECTIFIER DIODE FR101	NDWZ000FR101	4835 130 38062
D1010		ZENER DIODE DZ-16BSCT265 or	NDTC00DZ16BS	4835 130 37624
		ZENER DIODE MTZJT-7716C	QDTC00MTZJ16	9965 000 25505
D1011		ZENER DIODE DZ-6.8BSBT265 or	NDTB0DZ6R8BS	4835 130 38027
		ZENER DIODE MTZJT-776.8B	QDTB0MTZJ6R8	4835 130 37881
D1012		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1013		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1014		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1015		DIODE 1N5397-B	NDLZ001N5397	4835 130 38014
D1016		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1017		RECTIFIER DIODE BA158 or	NDQZ000BA158	4835 130 37976
		RECTIFIER DIODE BA158	NDWZ000BA158	4835 130 37976
D1018		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1019		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1021		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1022		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1023		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1024		RECTIFIER DIODE FR202-B/P or	NDQZ000FR202	4835 130 38058
		FAST RECOVERY DIODE FR202	NDWZ000FR202	4835 130 38058
D1025		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D1026		ZENER DIODE DZ-5.6BSBT265 or	NDTB0DZ5R6BS	4835 130 38026
		ZENER DIODE MTZJT-775.6B	QDTB0MTZJ5R6	4835 130 37329
D1029		PCB JUMPER D0.6-P10.0	JW10.0T	---- --- -----
D1030		SCHOTTKY BARRIER DIODE SB190	NDWZ000SB190	4835 130 38075
ICS				
IC010	⚠	IC, ERROR VOLTAGE DET LTV-817B-F or	NPEB0LTV817F	4835 130 37977
	⚠	IC, ERROR VOLTAGE DET LTV-817C-F or	NPEC0LTV817F	4835 130 37977

Ref. No.	⚠	Description	ID No.	Part No.
	⚠	IC, ERROR VOLTAGE DET EL817A or	NPEA000EL817	9965 000 19672
	⚠	IC, ERROR VOLTAGE DET EL817B or	NPEB000EL817	4835 209 47615
	⚠	IC, ERROR VOLTAGE DET EL817C or	NPEC000EL817	4835 209 47615
	⚠	IC, ERROR VOLTAGE DET PS2561A-1(W) or	QPEWPS2561A1	9965 000 25506
	⚠	IC, ERROR VOLTAGE DET PS2561A-1(Q)	QPEQPS2561A1	9965 000 25506
COILS				
L1001		CHOKE COIL 22µH-K or	LLBD00PKV006	4835 157 58024
		CHOKE COIL 22µH-K	LLBD00PKT002	4835 157 58024
L1002		CHOKE COIL 47µH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47µH-K or	LLBD00PKV005	4835 157 58208
		CHOKE COIL 47µH-K	LLBD00PKT001	4835 157 58208
L1003		RADIAL LEADED INDUCTOR LHFP13BB220M	LLC220MTU022	9965 000 25507
L1004		CHOKE COIL 47µH-K or	LLBD00PKV007	4835 157 58208
		CHOKE COIL 47µH-K or	LLBD00PKV005	4835 157 58208
		CHOKE COIL 47µH-K	LLBD00PKT001	4835 157 58208
L1005	⚠	LINE FILTER 27MH CGS-LF0059A	LLBG00ZSA010	4835 157 58286
L1006		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001	---- --- -----
L1007		BEAD CORE B16 RH 3.5X10X1.3	XL03010XM001	---- --- -----
L1008		CHOKE COIL 22µH-K or	LLBD00PKV006	4835 157 58024
		CHOKE COIL 22µH-K	LLBD00PKT002	4835 157 58024
L1009		RADIAL LEADED INDUCTOR LHFP13BB100M	LLC100MTU022	9965 000 25509
TRANSISTORS				
Q031		IC, SHUNT REGULATOR KTA1267(Y) "PNP" or	NQSY0KTA1267	4835 130 47913
		IC, SHUNT REGULATOR KTA1267(GR) "PNP" or	NQS10KTA1267	4835 130 47913
		IC, SHUNT REGULATOR 2SA1175(J) "PNP" or	QQSJ02SA1175	4835 130 47645
		IC, SHUNT REGULATOR 2SA1175(H) "PNP" or	QQSH02SA1175	4835 130 47645
		IC, SHUNT REGULATOR 2SA1175(F) "PNP"	QQSF02SA1175	4835 130 47645
Q1001	⚠	SWITCHING 2SK3563	QFWZ02SK3563	4835 130 48244
Q1003		SWITCHING CONTROL 2SC1815-GR(TPE2) "NPN"	QQS102SC1815	4835 130 47358
Q1008		SWITCHING CONTROL KTC3199(Y) "NPN"	NQSY0KTC3199	4835 130 47914
RESISTORS				
R1002		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R1003		CARBON RES. 1/4W 1.8k Ω ±5%	RCX4JATZ0182	4835 110 57033
R1004		CARBON RES. 1/4W 4.7k Ω ±5%	RCX4JATZ0472	4835 110 57051
R1005		CARBON RES. 1/4W 2.7k Ω ±5%	RCX4JATZ0272	4835 110 57006
●R1006		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJB5Z0102	4835 111 17068
●R1007		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	---- --- -----
●R1008		CHIP RES.(1608) 1/10W 4.7k Ω ±5%	RRXAJB5Z0472	4835 111 17166
●R1009		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJB5Z0182	4835 111 17154
●R1010		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	---- --- -----
●R1011		CHIP RES.(1608) 1/10W 2.2k Ω ±1% or	RRXAFB5H2201	4835 111 17156
		CHIP RES.(1608) 1/10W 2.2k Ω ±1%	RRXAFR5Z2201	4835 111 17156
●R1012		CHIP RES.(1608) 1/10W 5.6k Ω ±1% or	RRXAFB5H5601	4835 111 17168
		CHIP RES. 1/10W 5.6k Ω	RRXAFR5Z5601	4835 111 17168
●R1013		CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000	---- --- -----
●R1014		CHIP RES.(1608) 1/10W 68k Ω ±5%	RRXAJB5Z0683	4835 111 17172
R1015		METAL OXIDE FILM RES. 2W 82k Ω ±5% or	RN02823ZU001	4835 116 57809
		METAL OXIDE FILM RES. 2W 82k Ω ±5%	RN02823KE010	4835 116 57809
R1016		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
R1017		CARBON RES. 1/4W 1M Ω ±5%	RCX4JATZ0105	4835 110 57272
R1018		CARBON RES. 1/6W 680 Ω ±2% or	RCX6GATZ0681	4835 111 37203
		CARBON RES. 1/4W 680 Ω ±2%	RCX4GATZ0681	4835 110 57054
R1019		CARBON RES. 1/6W 22k Ω ±5% or	RCX6JATZ0223	4835 111 37177
		CARBON RES. 1/4W 22k Ω ±5%	RCX4JATZ0223	4835 110 57038
R1020		METAL OXIDE FILM RES. 2W 0.68 Ω ±5% or	RN02R68ZU001	4835 116 67298
		METAL OXIDE FILM RES. 2W 0.68 Ω ±5%	RN02R68KE009	4835 116 67321
R1021		CARBON RES. 1/6W 150k Ω ±5% or	RCX6JATZ0154	4835 111 37316
		CARBON RES. 1/4W 150k Ω ±5%	RCX4JATZ0154	4835 110 57206
R1022		CARBON RES. 1/6W 2.2k Ω ±5% or	RCX6JATZ0222	4835 111 37176
		CARBON RES. 1/4W 2.2k Ω ±5%	RCX4JATZ0222	4835 110 57079

Ref. No.	⚠	Description	ID No.	Part No.
R1023		CARBON RES. 1/4W 680k Ω ±5%	RCX4JATZ0684	4835 110 57227
R1024		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
R1025		CARBON RES. 1/6W 100k Ω ±5% or	RCX6JATZ0104	4835 110 57068
		CARBON RES. 1/4W 100k Ω ±5%	RCX4JATZ0104	4835 110 57185
●R1026		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJB5Z0103	4835 111 27027
R1027		CARBON RES. 1/6W 100k Ω ±5% or	RCX6JATZ0104	4835 110 57068
		CARBON RES. 1/4W 100k Ω ±5%	RCX4JATZ0104	4835 110 57185
R1028		CARBON RES. 1/6W 470k Ω ±5% or	RCX6JATZ0474	4835 110 57225
		CARBON RES. 1/4W 470k Ω ±5%	RCX4JATZ0474	4835 110 57225
R1029		METAL OXIDE FILM RES. 2W 1.8 Ω ±5% or	RN021R8DP004	4835 116 67311
		METAL OXIDE FILM RES. 2W 1.8 Ω ±5% or	RN021R8ZU001	4835 116 67311
		METAL OXIDE FILM RES. 2W 1.8 Ω ±5%	RN021R8KE010	4835 116 67311
R1030		CARBON RES. 1/6W 2.2k Ω ±5% or	RCX6JATZ0222	4835 111 37176
		CARBON RES. 1/4W 2.2k Ω ±5%	RCX4JATZ0222	4835 110 57079
R1031		CARBON RES. 1/6W 2.2k Ω ±5% or	RCX6JATZ0222	4835 111 37176
		CARBON RES. 1/4W 2.2k Ω ±5%	RCX4JATZ0222	4835 110 57079
R1033		CARBON RES. 1/4W 68k Ω ±5%	RCX4JATZ0683	4835 110 57168
MISCELLANEOUS				
2B18		HEATSINK V2600PZ	0VM409007A	---- --- -----
2L019		SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	---- --- -----
AC1001	⚠	AC CORD A0A0280-018 or	WAC0172LTE07	4835 321 17163
	⚠	AC CORD PB8K9F9110A-05A	WAC0172LW012	4835 321 17163
F1001	⚠	FUSE SIC 1.25A 250V U/C or	PAGK20CW3122	4835 253 97174
	⚠	FUSE 1.25A/250V	PAGG20CAG122	4835 253 97174
FH1001		FUSE HOLDER MSF-015 or	XH01Z00LY001	---- --- -----
		FUSE HOLDER DFH-001	XH01Z00RP001	---- --- -----
FH1002		FUSE HOLDER MSF-015 or	XH01Z00LY001	---- --- -----
		FUSE HOLDER DFH-001	XH01Z00RP001	---- --- -----
GP1001	⚠	GAP. FNR-G3.10D	FAZ000LD6005	4835 252 27025
SA1001	⚠	SURGE ABSORBER 470V+-10PER or	NVQZ10D471KB	4835 252 27024
	⚠	SURGE ABSORBER CNR-10D471K	NVQZR10D471K	4835 252 27024
T1001	⚠	SWITCHING TRANS. 4729-S02	LTT00CPKT157	9965 000 25514
W001		PARALLEL WIRE, 9P AWG26#2651/P2.0/90	WX1E9480-001	---- --- -----
W002		PARALLEL WIRE, 9P AWG26#2651/P2.0/200	WX1E9480-002	---- --- -----

JUNCTION-A CBA

Ref. No.	⚠	Description	ID No.	Part No.
		JUNCTION-A CBA (PSV-B) Consists of the following:	----------	
CONNECTOR				
CN1612		CONNECTOR, 9P TUC-P09X-B1	JCTUS09TG001	---- --- -----

JUNCTION-B CBA

Ref. No.	⚠	Description	ID No.	Part No.
		JUNCTION-B CBA (PSV-C) Consists of the following:	----------	
CONNECTOR				
CN1613		CONNECTOR, 9P TUC-P09X-B1	JCTUS09TG001	---- --- -----

FRONT CBA

Ref. No.	⚠	Description	ID No.	Part No.
		FRONT CBA (PSV-D) Consists of the following:	----------	
CAPACITORS				
C801		ELECTROLYTIC CAP. 10μF/25V ±20% H7	CE1EMAVSL100	4822 124 41291
●C802		CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
●C803		CHIP CERAMIC CAP. 1000pF/50V ±10% (B) or	CHD1JKB0B102	4835 122 87443
		CHIP CERAMIC CAP.(1608) 1000pF/50V ±10% (B)	CHD1JK30B102	4835 122 87153
C804		TF CAP. ECQV1H684JL	CT1J684MS042	9965 000 25517
C805		ELECTROLYTIC CAP. 22μF/25V ±20% H7	CE1EMAVSL220	9965 000 25518
C806		ELECTROLYTIC CAP. 47μF/35V ±20% H7 or	CE1GMASSL470	4835 124 97066
		ELECTROLYTIC CAP. 47μF/50V ±20% H7	CE1JMASSL470	4835 124 47507
●C807		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
●C809		CHIP CERAMIC CAP.(1608) 0.22μF/16V ±10% (B) or	CHD1CK30B224	4835 122 87135
		CHIP CERAMIC CAP.(1608) 0.22μF/25V ±10% (B)	CHD1EK30B224	4835 122 87152
●C810		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C811		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C812		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C813		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C814		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C815		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C816		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C817		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C818		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CH) or	CHD1JJ3CH101	4835 122 87193
		CHIP CERAMIC CAP.(1608) 100pF/50V ±5%(CG)	CHD1JJ3CG101	4835 122 87193
●C819		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C820		CHIP CERAMIC CAP.(1608) 0.01μF/50V ±10% (B)	CHD1JK30B103	4835 122 87255
●C821		CHIP CERAMIC CAP.(1608) 0.047μF/50V ±10% (B) or	CHD1JK30B473	4835 122 87162
		CHIP CERAMIC CAP.(1608) 0.047μF/25V ±10% (B)	CHD1EK30B473	4835 122 87185
C822		ELECTROLYTIC CAP. 22μF/16V ±20% H7	CE1CMAVSL220	4835 124 47175
CONNECTORS				
CN801		FFC/FPC CONNECTOR, 13P 00-6232-013-006-800 or	JC62G13TM010	---- --- -----
		FMN CONNECTOR, TOP 13P 13FMN-BTK	JCFNG13JG001	---- --- -----
DIODES				
D801		ZENER DIODE DZ-6.8BSCT265 or	NDTC0DZ6R8BS	4835 130 38027
		ZENER DIODE MTZJT-776.8C	QDTC0MTZJ6R8	4835 130 37881
D802		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
D803		SWITCHING DIODE 1N4148M or	NDTZ01N4148M	4835 130 37048
		SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133	4835 130 37235
IC				
●IC801		IC, FRONT PANEL CONTROL TMP87CH74AF-3RU1(Z)	QSZAA0RTS015	4835 209 47642
COILS				
L801		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L802		PCB JUMPER D0.6-P5.0	JW5.0T	---- --- -----
L803		INDUCTOR 180μH-K-26T	LLAXKATTU181	4835 157 57372
TRANSISTORS				
Q801		SWITCHING BC337-25-AT	NQS8000BC337	9965 000 25475
Q802		SWITCHING BC327-25-AT	NQS8000BC327	3198 020 43430

Ref. No.	⚠	Description	ID No.	Part No.
Q803		SWITCHING BC547-S-BB	NQSB000BC547	9965 000 25523
Q805		INVERTER BC547-S-BB	NQSB000BC547	9965 000 25523
Q806		DRIVE BC547-S-BB	NQSB000BC547	9965 000 25523
Q807		DRIVE BC547-S-BB	NQSB000BC547	9965 000 25523
RESISTORS				
●R801		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R802		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
R803		CARBON RES. 1/6W 10k Ω ±5%	RCX6JATZ0103	4835 111 37163
R804		CARBON RES. 1/6W 470 Ω ±5%	RCX6JATZ0471	4835 111 37193
R805		CARBON RES. 1/6W 470 Ω ±5%	RCX6JATZ0471	4835 111 37193
●R806		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R807		CHIP RES.(1608) 1/10W 470 Ω ±5%	RRXAJR5Z0471	4835 111 37259
●R808		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R809		CHIP RES.(1608) 1/10W 330 Ω ±5%	RRXAJR5Z0331	4835 111 37443
●R810		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R811		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R812		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R813		CHIP RES.(1608) 1/10W 100 Ω ±5%	RRXAJR5Z0101	4835 111 37432
●R814		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R815		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R816		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R817		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R818		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R819		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R820		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R822		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R823		CHIP RES.(1608) 1/10W 100k Ω ±5%	RRXAJR5Z0104	4835 111 37434
●R825		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R826		CHIP RES.(1608) 1/10W 22k Ω ±5%	RRXAJR5Z0223	4835 111 37441
●R827		CHIP RES.(1608) 1/10W 10k Ω ±5%	RRXAJR5Z0103	4835 111 37216
●R828		CHIP RES.(1608) 1/10W 220 Ω ±5%	RRXAJR5Z0221	4835 111 37371
●R829		CHIP RES.(1608) 1/10W 47k Ω ±5%	RRXAJR5Z0473	4835 111 37427
R830		THERMAL SENSOR LT1/ 6CT26A103J1000	RTX6103KA008	4835 276 17358
●R831		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R832		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
●R833		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R835		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R836		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
SWITCHES				
SW801		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW802		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW803		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
2B41		HOLDER, F.I.P. 2 H5341UD	0VM407372	---- --- -----
FIP801		V.F.D BJ944GN	TVFD1C0FT046	9965 000 25520
X801		CERAMIC RESONETOR CSTLS8M00G56-B0	FY0805PMR002	9965 000 25524

JACK-A CBA

Ref. No.	⚠	Description	ID No.	Part No.
		JACK-A CBA (PSV-E) Consists of the following:	----------	
CAPACITORS				
●C751		CHIP CERAMIC CAP. 330pF/50V ±10% (B)	CHD1JK30B331	4835 122 87032
●C752		CHIP CERAMIC CAP. 330pF/50V ±10% (B)	CHD1JK30B331	4835 122 87032
●C753		CHIP CERAMIC CAP.(1608) 47pF/50V ±5% (CH) or	CHD1JJ3CH470	4835 122 87148
		CHIP CERAMIC CAP. 47pF/50V ±5% (CG)	CHD1JJ3CG470	4835 122 87034
CONNECOTRS				
CN751		FFC/FPC CONNECTOR, 8P 00-6232-008-006-800 or	JC62G08TM010	---- --- -----
		FMN CONNECTOR, TOP 8P 08FMN-BTRK	JCFNG08JG002	---- --- -----
DIODE				
D751		LED(RED) 204HD/E	NPQZ00204HDE	4835 130 87166
TRANSISTORS				
Q751		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q752		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q753		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
RESISTORS				
●R751		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R752		CHIP RES.(1608) 1/10W 1M Ω ±5%	RRXAJR5Z0105	4835 111 37217
●R753		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R754		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R755		CHIP RES.(1608) 1/10W 150 Ω ±5%	RRXAJR5Z0151	4835 111 37334
●R756		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R757		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R758		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R759		CHIP RES.(1608) 1/10W 68 Ω ±5%	RRXAJR5Z0680	4835 111 37408
SWITCHES				
SW751		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW752		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW753		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
JK751		RCA PIN JACK RJ-1169*02-1300B	JYRJ010JD001	9965 000 25528
JK752		RCA PIN JACK RJ-1169*03-1300B	JYRJ010JD002	9965 000 25529
JK753		RCA PIN JACK RJ-1169*04-1300A	JXRJ010JD003	9965 000 25530

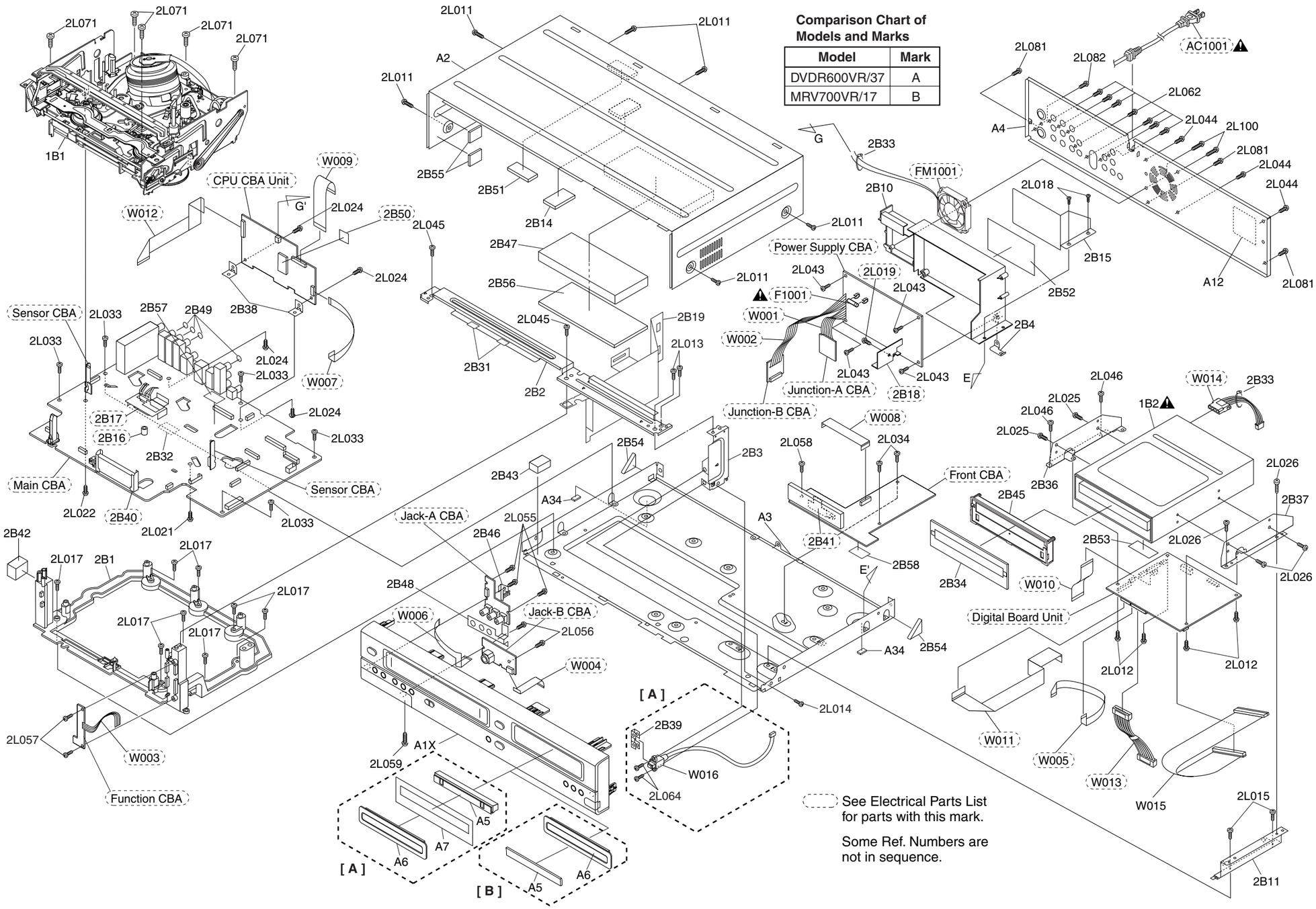
JACK-B CBA

Ref. No.	⚠	Description	ID No.	Part No.
		JACK-B CBA (PSV-G) Consists of the following:	----------	
CAPACITORS				
●C901		CHIP CERAMIC CAP.(1608) 0.1μF/25V ±10% (B) or	CHD1EK30B104	4835 122 87213
		CHIP CERAMIC CAP.(1608) 0.1μF/16V ±10% (B)	CHD1CK30B104	4835 122 87634
CONNECTOR				
CN901		FFC/FPC CONNECTOR 7P 00 6232 007 104 800	JC62G07UG022	9965 000 25532
TRANSISTORS				
Q901		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
Q902		ZENER DIODE UMZ6.8N T106	QD1Z0UMZ6R8N	9965 000 25531
RESISTORS				
●R901		CHIP RES.(1608) 1/10W 1.8k Ω ±5%	RRXAJR5Z0182	4835 111 37231
●R902		CHIP RES.(1608) 1/10W 1.2k Ω ±5%	RRXAJR5Z0122	4835 111 37222
●R903		CHIP RES.(1608) 1/10W 1k Ω ±5%	RRXAJR5Z0102	4835 111 17068
●R904		CHIP RES.(1608) 1/10W 1.5k Ω ±5%	RRXAJR5Z0152	4835 111 37437
●R905		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R906		CHIP RES.(1608) 1/10W 75 Ω ±5%	RRXAJR5Z0750	4835 111 17131
●R907		CHIP RES.(1608) 1/10W 2.2k Ω ±5%	RRXAJR5Z0222	4835 111 37234
SWITCHES				
SW901		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW902		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW903		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
		TACT SWITCH SKQSAF001A or	SST0101AL041	4835 276 17282
		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
SW904		TACT SWITCH KSM0614B or	SST0101HH013	4835 276 17282
SW904		TACT SWITCH SKQSAF001A	SST0101AL041	4835 276 17282
SW904		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356

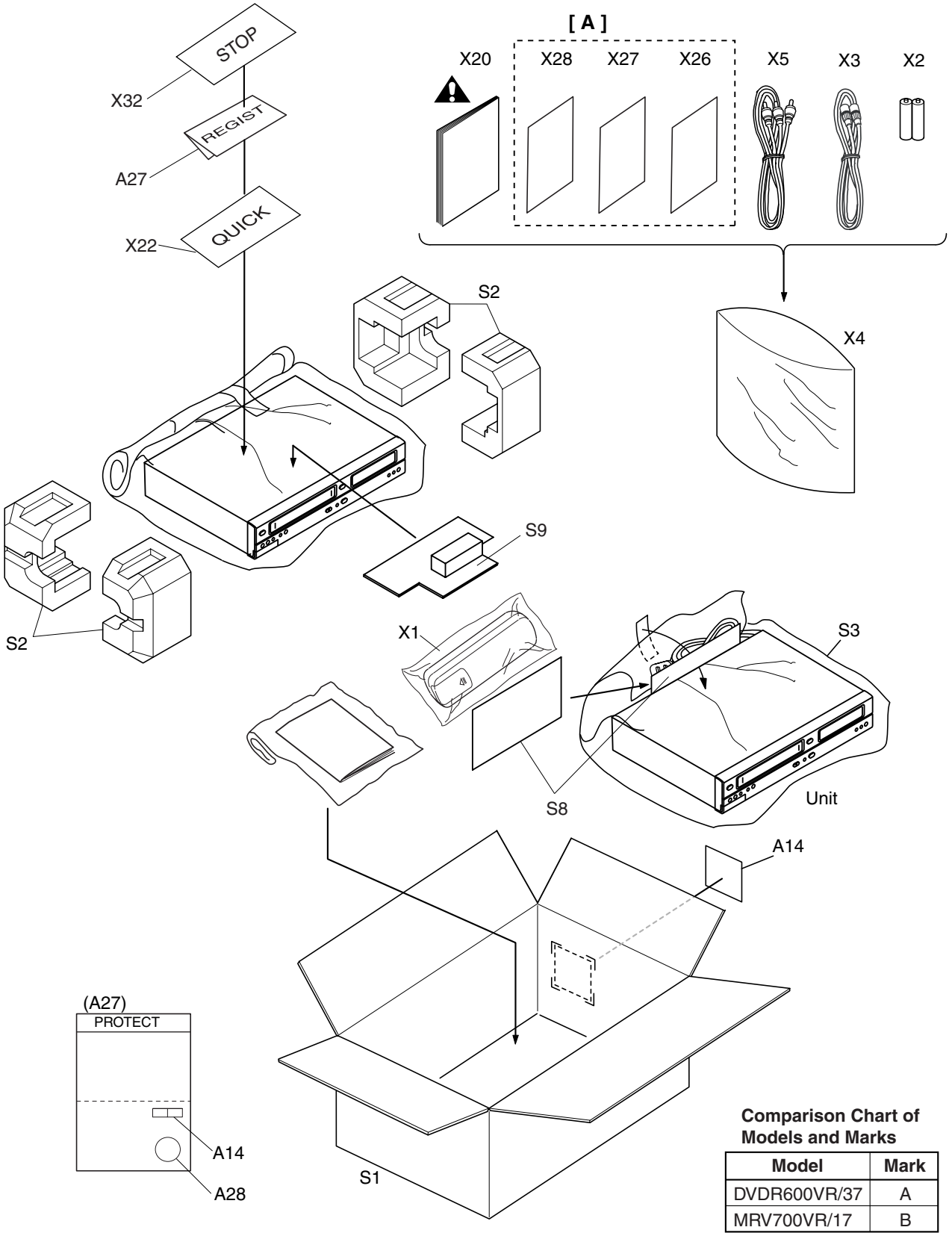
Ref. No.	⚠	Description	ID No.	Part No.
SW905		TACT SWITCH KSM0614B	SST0101HH013	4835 276 17282
SW905		TACT SWITCH SKQSAF001A	SST0101AL041	4835 276 17282
SW905		TACT SWITCH TC-1104(H=9.5)	SST0101DNG01	4835 276 17356
MISCELLANEOUS				
JK901		S TYPE JACK MDC1-03D-002	JXEJ040RP001	9965 000 25533

EXPLODED VIEWS

Cabinet



Packing



Comparison Chart of Models and Marks

Model	Mark
DVDR600VR/37	A
MRV700VR/17	B

MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---- --- ----- or blank) are not normally available.

To order parts call the TOLL FREE Philips Sales Center number: 1 - 800 - 851 - 8885
(In Canada) 1 - 800 - 363 - PART.
1 - 800 - 535 - 3715 (Fax).

Comparison Chart of Models and Marks

Model	Mark
DVDR600VR/37	A
MRV700VR/17	B

Ref. No.	⚠	Mark	Description	ID No.	Part No.
A1X		A	FRONT ASSEMBLY	1VM220129	9965 000 25422
A1X		B	FRONT ASSEMBLY	1VM220134	4835 444 47234
A2			TOP COVER	0VM101356	4835 444 27022
A3			MAIN CHASSIS	1VM120046	---- --- -----
A4			PANEL, REAR	0VM204539	4835 444 47233
A5		A	TRAY PANEL HOLDER	1VM320073	9965 000 25423
A5		B	DECORATION COVER	1VM320033	4835 444 67283
A6		A	TRAY PANEL	1VM320058	9965 000 25424
A6		B	TRAY PANEL	1VM220025	4835 444 67281
A7		A	PANEL SHEET	1VM421005	---- --- -----
A12		A	MODEL NO. LABEL	---------	---- --- -----
A12		B	MODEL NO. LABEL	---------	---- --- -----
A14			LABEL, BAR CODE	---------	---- --- -----
A14		A	BARCODE LABEL	---------	---- --- -----
A14		B	BARCODE LABEL	---------	---- --- -----
A27		A	REGISTRATION CARD	0VMN04105	---- --- -----
A27		B	REGISTRATION CARD	0VMN04129	---- --- -----
A28			LABEL, IMPORTANT	---------	---- --- -----
A34			FOOT	0VM403657	4835 462 47084
1B1			DECK ASSEMBLY CZD013/VM2260	N2260FL	9965 000 24110
1B2	⚠		DVD MECHA & FE ASSEMBLY	1VMN20219	4835 691 17095
2B1			DECK PEDESTAL	0VM101373	4835 462 17024
2B2			FRONT BRACKET	0VM204534	---- --- -----
2B3		A	FRONT BRACKET R	1VM420840	---- --- -----
2B3		B	FRONT BRACKET R	0VM416269	---- --- -----
2B4			EARTH PLATE	0VM416272	---- --- -----
2B10			HOLDER,PCB	0VM101354	---- --- -----
2B11			BRACKET R	0VM416268	---- --- -----
2B14			CUSHION,RUBBER	0VM416664	---- --- -----
2B15		A	FFC FRICTION PLATE	1VM420747A	---- --- -----
2B15		B	FFC FRICTION PLATE	1VM420747	---- --- -----
2B19			RADIATION SHIET	1VM320507	---- --- -----
2B31			TAPE, HIMELON	0VM413956	---- --- -----
2B32			DOUBLE SIDE TAPE	0VM412870	---- --- -----
2B33			LEAD CLAMPER GT-80M or	XF00080HL001	---- --- -----
			LEAD CLAMPER 100MM	1790356	---- --- -----
2B34			FOAM RUBBER SEALING	1VM320543	---- --- -----
2B36			MECHA BRACKET L	0VM416288	---- --- -----
2B37			MECHA BRACKET R	0VM416289	---- --- -----
2B38			L ANGLE	0VM416713	---- --- -----
2B39		A	DV EARTH PLATE	1VM420858	---- --- -----
2B42			RUBBER CUSHION(B)	1VM421022	---- --- -----
2B43			RUBBER CUSHION(C)	1VM420832	---- --- -----
2B45			DUST COVER(B SUPLLY) 3103 604 0114	1VM220205	4835 444 67282
2B46			EARTH PLATE(B)	1VM320498	---- --- -----
2B47			CUSHION	1VM420831	---- --- -----
2B48			EARTH PLATE(C)	1VM320522	---- --- -----
2B49			RCA EARTH	0VM413582	---- --- -----
2B51			CUSHION(B)	1VM421006	---- --- -----
2B52			FIBER, HOLDER	1VM421013	---- --- -----
2B53			TAPE, HIMELON	0VM415649	---- --- -----
2B54			RUBBER CUSHION(D)	1VM420881	---- --- -----
2B55			SIDE BOARD	1VM421021	---- --- -----
2B56			CUSHION C	1VM421041	---- --- -----
2B57			TAPE, HIMELON(B)	0VM414456	---- --- -----
2B58			INSULATION PLATE	1VM421073	---- --- -----
2L011			SCREW, C-TIGHT M3X5 BIND HEAD +	GBCC3050	---- --- -----
2L012			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L013			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L014			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L015			SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050	---- --- -----
2L017			SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	---- --- -----
2L018			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L021			SCREW, P-TIGHT M3X8 BIND HEAD+	GBCP3080	---- --- -----
2L022			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L024			SCREW, SEMS M3X8 PAN HEAD +	CPM33080	---- --- -----
2L025			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L026			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L033			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L034			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L043			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L044			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L045			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L046			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L055			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L056			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L057			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L058			P-TIGHT SCREW 3X8 BIND +	GBMP3080	---- --- -----
2L059			SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
2L062			SCREW, B-TIGHT M3X8 BIND HEAD +	GBKB3080	---- --- -----
2L064		A	SCREW, S-TIGHT M3X8 BIND HEAD+	GBMS3080	---- --- -----
2L071			SCREW, P-TIGHT M3X10 WASHER HEAD+	GCMP3100	---- --- -----
2L081			SCREW, S-TIGHT M3X5 BIND HEAD +	GBKS3050	---- --- -----
2L082			SCREW, S-TIGHT M3X5 BIND HEAD +	GBKS3050	---- --- -----
2L100			P-TIGHT SCREW M3X34	1VM420034	---- --- -----
W015			IDE CABLE 40P UL2651 AWG28/180	WX1E9480-015	9965 000 25427
W016		A	ILINK CABLE CA-2011-033-A04	WX1E9480-016	9965 000 25428
PACKING					
S1		A	GIFT BOX CARTON	1VM320370	---- --- -----
S1		B	GIFT BOX CARTON	1VM320371	---- --- -----
S2		A	SIDE PAD	1VM120048	---- --- -----
S2		B	SIDE PAD	1VM120051	---- --- -----
S3			SET BAG	0DM400731	---- --- -----
S8			REMOCON PAD	1VM420910	---- --- -----

Ref. No.	⚠	Mark	Description	ID No.	Part No.
S9			TOP PAD	1VM420911	---- --- -----
ACCESSORIES					
X1		A	REMOTE CONTROL UNIT DUAL REMOCON	NA724UD	9965 000 25429
X1		B	REMOTE CONTROL UNIT DUAL REMOCON	NA510UD	4835 218 37367
X2			DRY BATTERY 2PACK R6-B500/01S	XB0M142CZB01	
X3			RF CABLE 2.5C-2V	WPZ0901TM002	4835 321 17157
X4			ACCESSORY BAG	0VM415576	---- --- -----
X5			AV CORD TSCKA-Y/RW100 or	WPZ0102TM015	4835 321 17148
			AV CORD RCA(M*2)TO RCA(M*2)	WPZ0102LTE01	4835 321 17148
X20	⚠	A	OWNER'S MANUAL	1VMN20183A	8239 300 33912
X20	⚠	B	OWNER'S MANUAL	1VMN20247	8239 300 34951
X22		A	QUICK GUIDE	1VMN20182	8239 300 33901
X22		B	QUICK GUIDE	1VMN20248	8239 300 34961
X26		A	ADDENDUM SHEET	1VMN20350	
X27		A	ADDENDUM SHEET (B)	1VMN20354	
X28		A	ADDENDUM SHEET(C)	1VMN20365	
X32		A	STOP SHEET	0VMN03202A	---- --- -----
X32		B	STOP SHEET	0VMN03201A	---- --- -----

Philips Consumer Electronics Company **MANUAL 5897**
A Division of Philips Electronics North America Corporation

Technical Service Data

Service Solutions Group
Technical Publications Dept.
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.
Jefferson City,TN 37760

Sec. 2: Deck Mechanism Section
Standard Maintenance
Disassembly / Assembly of Mechanism
Adjustment / Alignment for Mechanism
Deck Exploded Views
Deck Parts List

VCR
Service Manual

VHS Color Video Cassette Recorder

First Issue: 2/04

©2004 Philips Consumer Electronics Company

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.**

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

**** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.**

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

*** Broken Line** — - — - — - —

TABLE OF CONTENTS

[Deck Mechanism Section]

	Page
STANDARD MAINTENANCE	2-1-1
SERVICE FIXTURE & TOOLS	2-2-1
MECHANICAL ALIGNMENT PROCEDURES	2-3-1
DISASSEMBLY / ASSEMBLY PROCEDURES OF DECK MECHANISM	2-4-1
ALIGNMENT PROCEDURES OF MECHANISM	2-5-1
DECK EXPLODED VIEW	2-6-1
DECK PARTS LIST	2-7-1

Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

STANDARD MAINTENANCE

Service Schedule of Components

H: Hours ○: Check ●: Change

Deck		Periodic Service Schedule			
Ref.No.	**Part Name**	**1,000 H**	**2,000 H**	**3,000 H**	**4,000 H**
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B587	Tension Lever Assembly		●		●
B31	ACE Head Assembly			●	
B573, B574	Reel (SP)(D2), Reel (TU)(D2)			●	
B37	Capstan Motor		●		●
B52	Cap Belt		●		●
B73	FE Head			●	
B133, B134	Idler Gear, Idler Arm		●		●
B410	Pinch Arm(A) Assembly		●		●
B414	M Brake (SP) Assembly		●		●
B416	M Brake (TU) Assembly		●		●
B525	LDG Belt		●		●
B569 (2 head only)	Cam Holder		●		●
B593 (4 head, 4 head HiFi only)	Cam Holder Assembly		●		●

Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / ACE Head / FE Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

Cleaning

Cleaning of Video Head

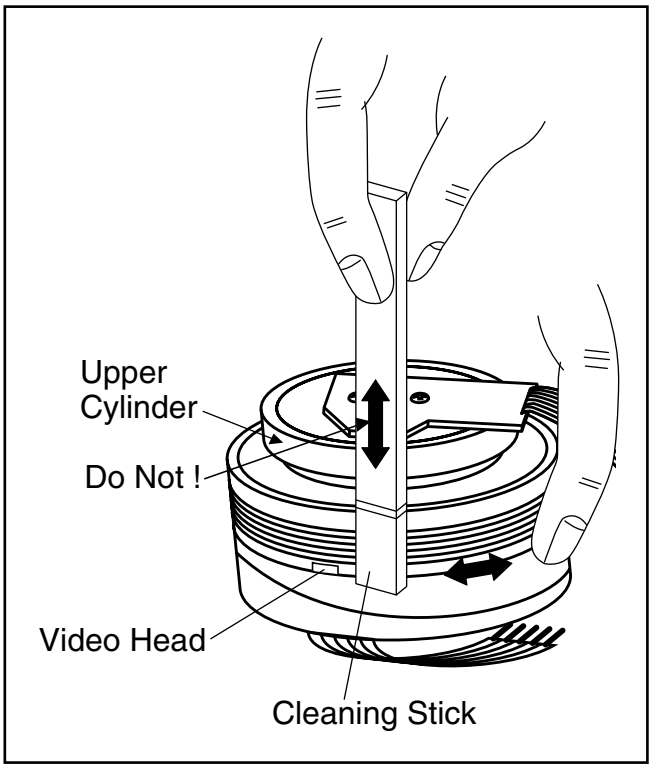
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of ACE Head

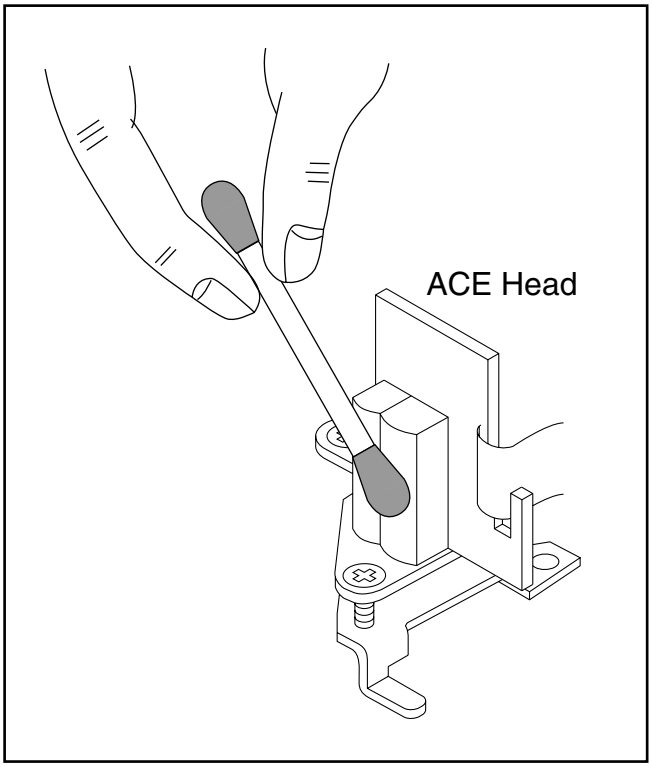
Clean the head with a cotton swab.

Procedure

1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the ACE Head. Be careful not to damage the upper drum and other tape running parts.

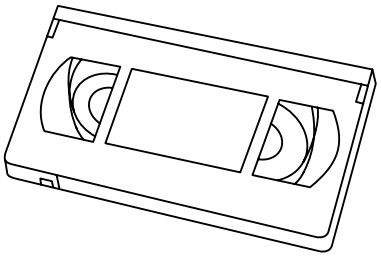
Notes:

1. Avoid cleaning the ACE Head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.

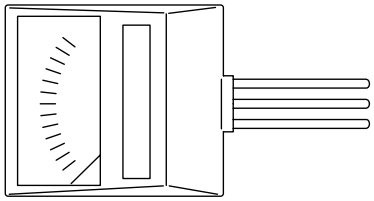


SERVICE FIXTURE AND TOOLS

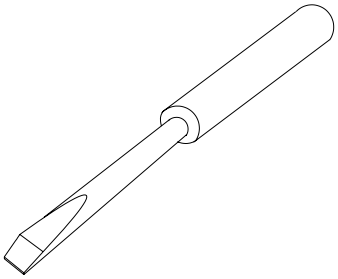
4835 310 57025
VFMS0001H6
Alignment Tape



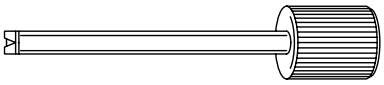
4835 310 57043
Back Tension Meter
(Made in USA)



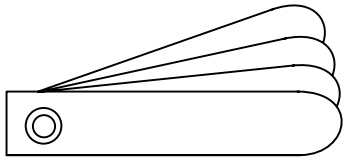
Flat Screw Driver
(Purchase Locally)



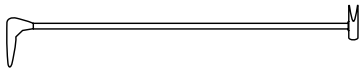
4835 310 57027
Post Adjustment Screwdriver



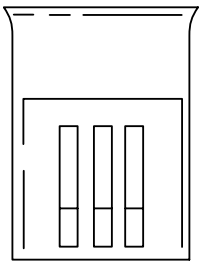
Metric Thickness Gauges
(Purchase Locally)



Lock Screw Driver
(Purchase Locally)



4835 310 57034
Head Cleaning Stick



MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 for a minute or two to complete this task.

To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Case and Front Assembly.
3. Make sure that the Moving guide preparations are in the Eject Position.
4. Turn the LDG Belt in the appropriate direction shown in Fig. M1 until the Moving guide preparations come to the Eject Position. Stop turning when the preparations begin clicking or can not be moved further. However, the tape will be left wound around the cylinder.
5. Turn the LDG Belt in the appropriate direction continuously, and the cassette tape will be ejected. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Case and Front Assembly.
3. Turn the LDG Belt in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the LDG Belt until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View

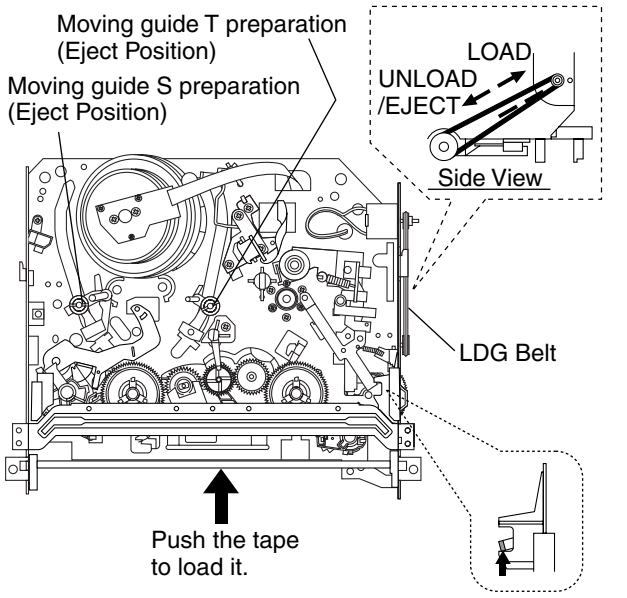


Fig. M1

Bottom View

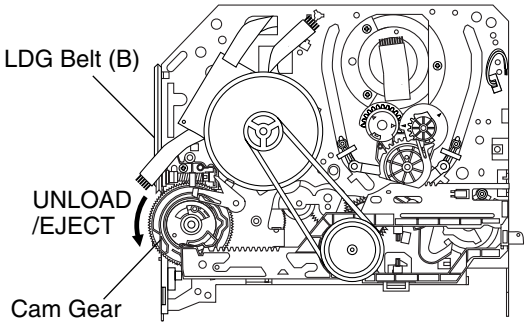


Fig. M2

1. Tape Interchangeability Alignment

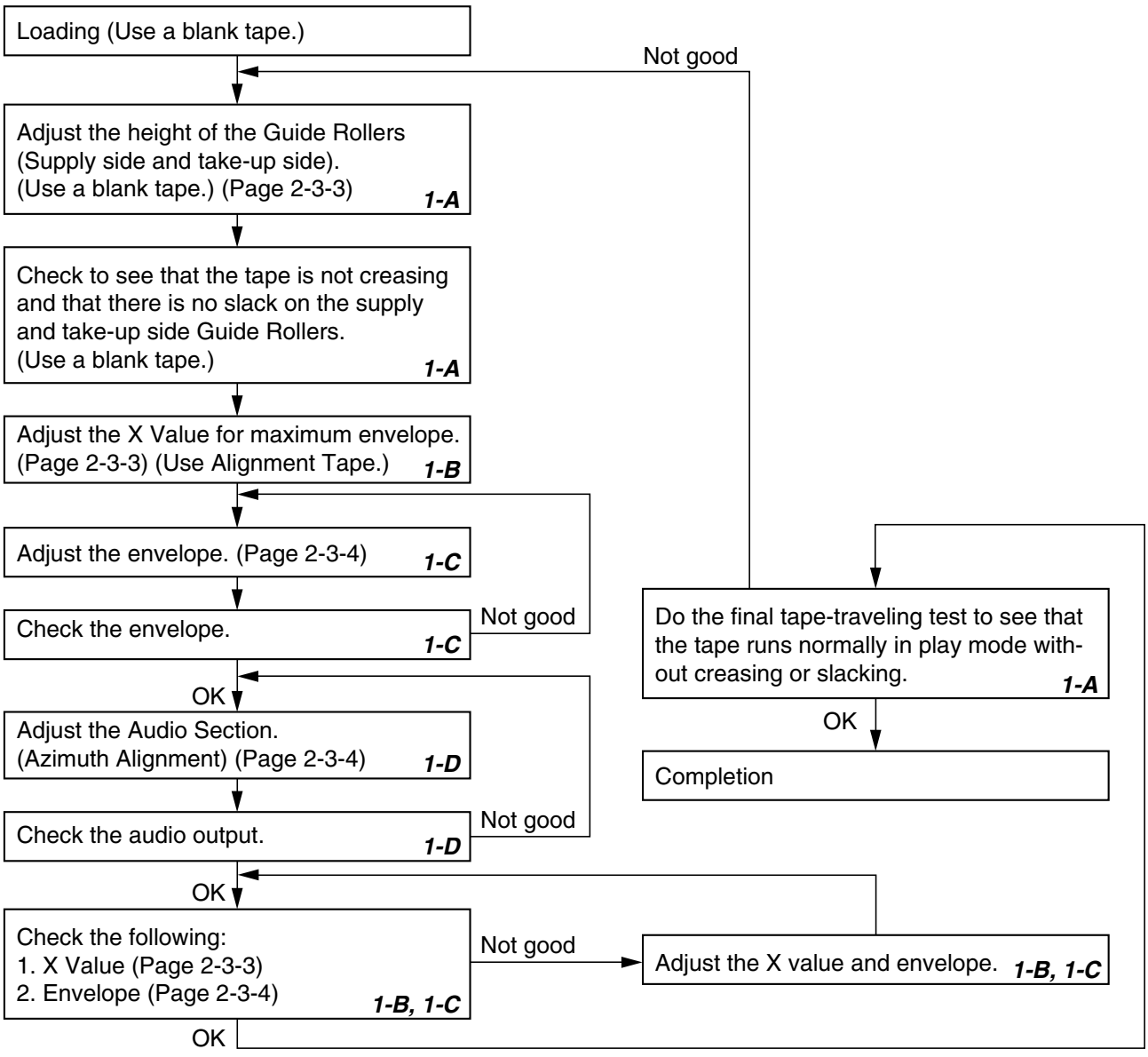
Note:
To do these alignment procedures, make sure that the Tracking Control Circuit is set to the preset position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0001H6)
Guide Roller Adj. Screwdriver
Flat Screwdriver (Purchase Locally)

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Not good
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (Page 2-3-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (Page 2-3-3) (Use Alignment Tape.) 1-B
Adjust the envelope. (Page 2-3-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (Page 2-3-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following:
1. X Value (Page 2-3-3)
2. Envelope (Page 2-3-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion

1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Playback a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig. M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)

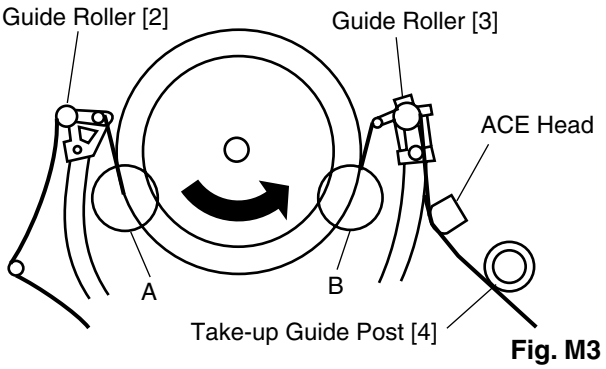


Fig. M3

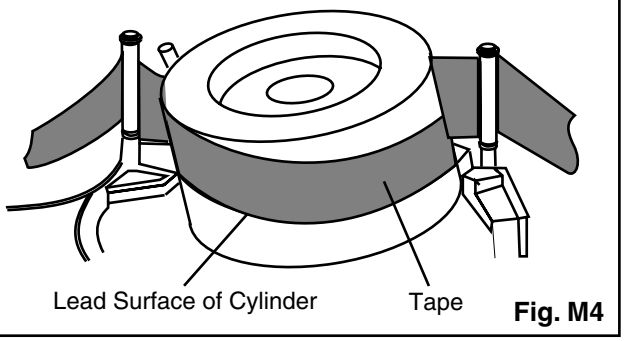


Fig. M4

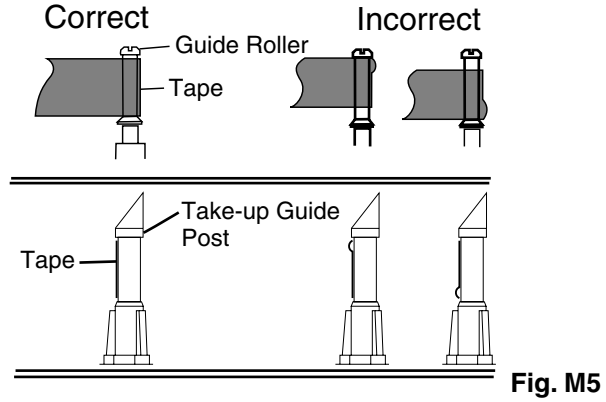


Fig. M5

3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head. (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)

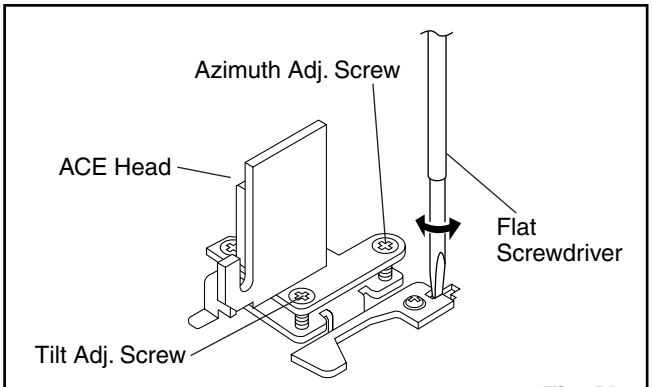


Fig. M6

1-B. X Value Alignment

Purpose:

To obtain maximum PB FM envelope signal at the preset position of the Tracking Control Circuit, align the Horizontal Position of the ACE Head.

Symptom of Misalignment:

If the Horizontal Position of the ACE Head is not properly aligned, maximum PB FM envelope cannot be obtained at the preset position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP (C-PB and CTL) on the Main CBA. Use TP (RF-SW) as a trigger.
2. Playback the Gray Scale of the Alignment Tape (VFMS0001H6) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit then “PLAY” button on the unit. (Refer to note on bottom of page 2-3-4.)
4. Use the Flat Screwdriver so that the PB FM signal at TP (C-PB) is maximum. (Fig. M6)

5. To shift the CTL waveform, press CH UP or CH DOWN button on the remote control unit. Then make sure that the maximum output position of PB FM envelope signal become within ±2ms from preset position.

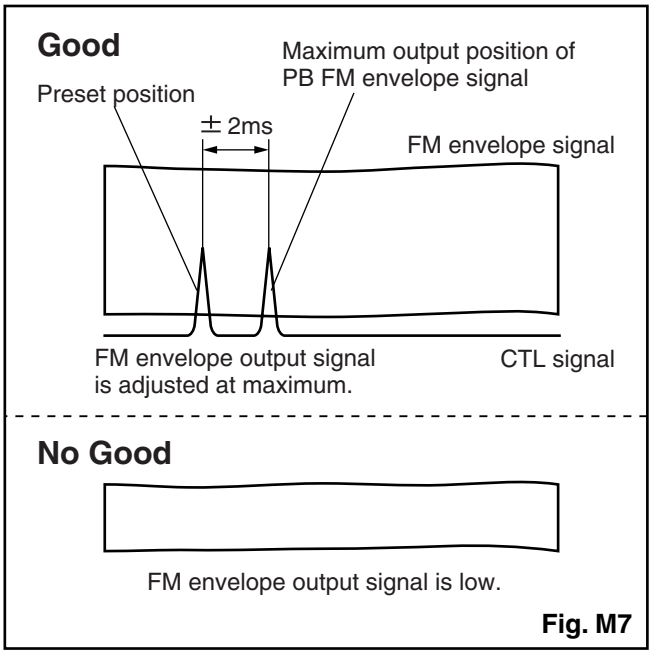


Fig. M7

6. Set the Tracking Control Circuit to the preset position by pressing CH UP button on the remote control unit. and then “PLAY” button.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture, adjust the PB FM envelope becomes as flat as possible.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP (C-PB) on the Main CBA. Use TP (RF-SW) as a trigger.
2. Playback the Gray Scale on the Alignment Tape (VFMS0001H6). Set the Tracking Control Circuit to the preset position by pressing CH UP button and then “PLAY” button on the unit. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
5. When Guide Rollers [2] and [3] (Refer to Fig. M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

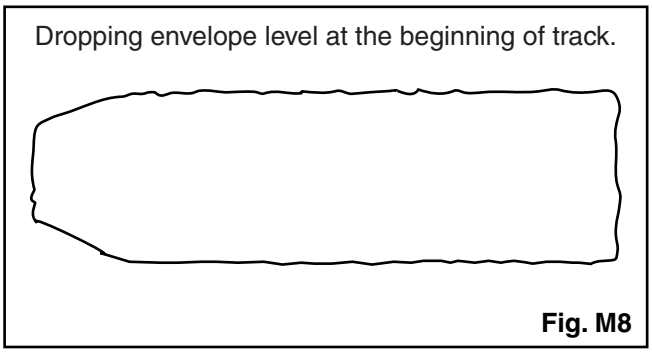


Fig. M8

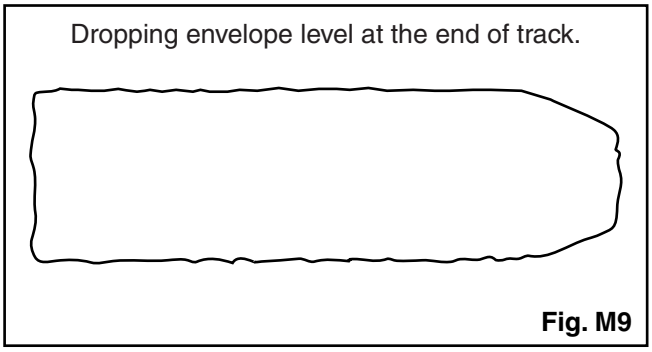


Fig. M9

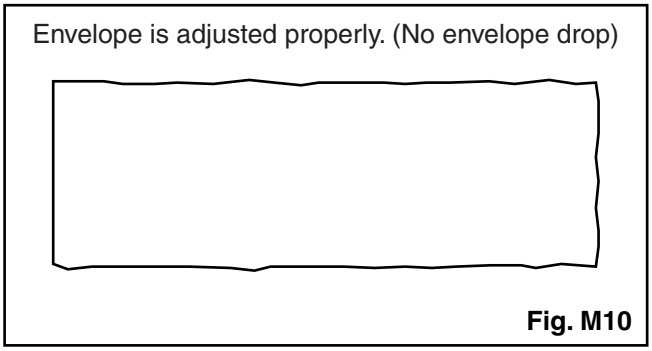


Fig. M10

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure preset position. The number of pushes CH UP button to achieve 1/2 level of envelope should match the number of pushes CH DOWN button from center. If required, redo the “X Value Alignment.”

1-D. Azimuth Alignment of Audio/Control/ Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/ Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Playback the alignment tape (VFMS0001H6) and confirm that the audio signal output level is 6kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Before following the procedures described below, be sure to remove the deck assembly from the cabinet. (Refer to CABINET DISASSEMBLY INSTRUCTIONS of Main Section.)
All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [41] and [42] in Fig. DM1 on page 2-4-3. When reassembling, follow the steps in reverse order.

Comparison Chart of Models and Marks

Model	Deck Part No.	Mark	Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A	MDV540VR/17	N2260FL	G
MVR440MG/17	N2240FL	B	19MDTR20/17	N2266FT	H
MVR450MG/17	N2240FL	C	20MC4304/17	N2266FT	I
MVR650MG/17	N2260FL	D	27MC4304/17	N2266FT	J
DVP620VR/17	N2260FL	E	27MDTR20/17	N2266FT	K
DVP620VR/07	N2260FL	F			

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder A	T	DM3	2(S-1)	
[2]	[1]	Cassette Holder Assembly	T	DM4	(S-10) --- **[A,H,I,J,K]**	
[3]	[2]	Slider (SP)	T	DM5	(S-1A), *(L-1)	
[4]	[2]	Slider (TU)	T	DM5	*(L-2)	
[5]	[4]	Lock Lever	T	DM5	*(L-3), *(P-1)	
[6]	[2]	Cassette Plate	T	DM5		
[7]	[7]	Cylinder Assembly	T	DM1, DM6	Desolder, 3(S-2)	
[8]	[8]	Loading Motor Assembly	T	DM1, DM7	Desolder, LDG Belt, 2(S-3)	
[9]	[9]	ACE Head Assembly	T	DM1, DM7	(S-4)	
[10]	[2]	Tape Guide Arm Assembly	T	DM1, DM8-1	*(P-2)	
[11]	[10]	C Door Opener	T	DM1, DM8-1	(S-4A), *(L-4)	
[12]	[11]	Pinch Arm (B)	T	DM1, DM8-1, DM8-2	*(P-3)	
[13]	[12]	Pinch Arm (A) Assembly	T	DM1, DM8-1, DM8-2		
[14]	[14]	FE Head	T	DM1, DM9	(S-5)	
[15]	[15]	Prism	T	DM1, DM9	(S-6)	
[16]	[2],[15]	Sensor Gear	T	DM1, DM9		
[17]	[2]	Slider Shaft	T	DM10	*(L-5)	
[18]	[17]	C Drive Lever (SP)	T	DM10		
[19]	[17]	C Drive Lever (TU)	T	DM10	(S-7), *(P-4)	
[20]	[7],[8], [10]	Capstan Motor	B	DM2, DM11	3(S-8), Cap Belt	
[21]	[21]	Clutch Assembly	B	DM2, DM12	(C-1)	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[22]	[22]	Cam Holder(F) --- **[A]** Cam Holder Assembly --- **[B,C,D,E,F,G,H,I,J,K]**	B	DM2, DM12	*(L-6)	
[23]	[23]	Cam Gear (B)	B	DM2, DM12	(C-2), *(P-5)	
[24]	[24]	Mode Gear	B	DM2, DM13-1	(C-3)	
[25]	[21],[23], [24]	Mode Lever	B	DM2, DM13-1, DM13-2	(C-4), *(L-8)	
[26]	[22]	Worm Holder	B	DM2, DM13-1	(S-9), *(L-9), *(L-10)	
[27]	[26]	Pulley Assembly	B	DM2, DM13-1		
[28]	[25],[26]	Cam Gear (A)	B	DM2, DM13-1, DM13-2		
[29]	[25]	Idler Gear	B	DM1, DM14		
[30]	[29]	Idler Arm	B	DM1, DM14	*(L-11)	
[31]	[25]	BT Arm	B	DM2, DM14	*(P-6)	
[32]	[25]	Loading Arm (SP) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[33]	[32]	Loading Arm (TU) Assembly	B	DM2, DM14		(+)Refer to Alignment Sec.Page 2-5-1
[34]	[2],[25]	M Brake (TU) Assembly	T	DM1, DM15	*(P-7), Brake Belt	
[35]	[2],[25]	M Brake (SP) Assembly	T	DM1, DM15	*(P-8)	
[36]	[35]	Tension Lever Assembly	T	DM1, DM15		
[37]	[36]	T Lever Holder	T	DM15	*(L-12)	
[38]	[34]	Reel (TU)(D2)	T	DM1, DM15		
[39]	[38]	M Gear	T	DM1, DM15		
[40]	[36]	Reel (SP)(D2)	T	DM1, DM15		
[41]	[32],[36]	Moving Guide S Preparation	T	DM1, DM16		
[42]	[33]	Moving Guide T Preparation	T	DM1, DM16		
[43]	[19]	TG Post Assembly	T	DM1, DM16	*(L-13)	
[44]	[28]	Rack Assembly	R	DM17		(+)Refer to Alignment Sec.Page 2-5-1
[45]	[44]	F Door Opener	R	DM17	*(P-9) --- **[A,H,I,J,K]**	
[46]	[46]	Cleaner Assembly	T	DM1, DM6		
[47]	[46]	CL Post	T	DM6	*(L-14)	
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)	↓ (6)	↓ (7)

(1): Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as identification (location) No. of parts in the figures.
(2): Indicates the part to start disassembling with in order to disassemble the part in column (1).
(3): Name of the part
(4): Location of the part: T=Top B=Bottom R=Right L=Left
(5): Figure Number
(6): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).
(7): Adjustment Information for Installation
(+):Refer to Deck Exploded Views for lubrication.

Top View

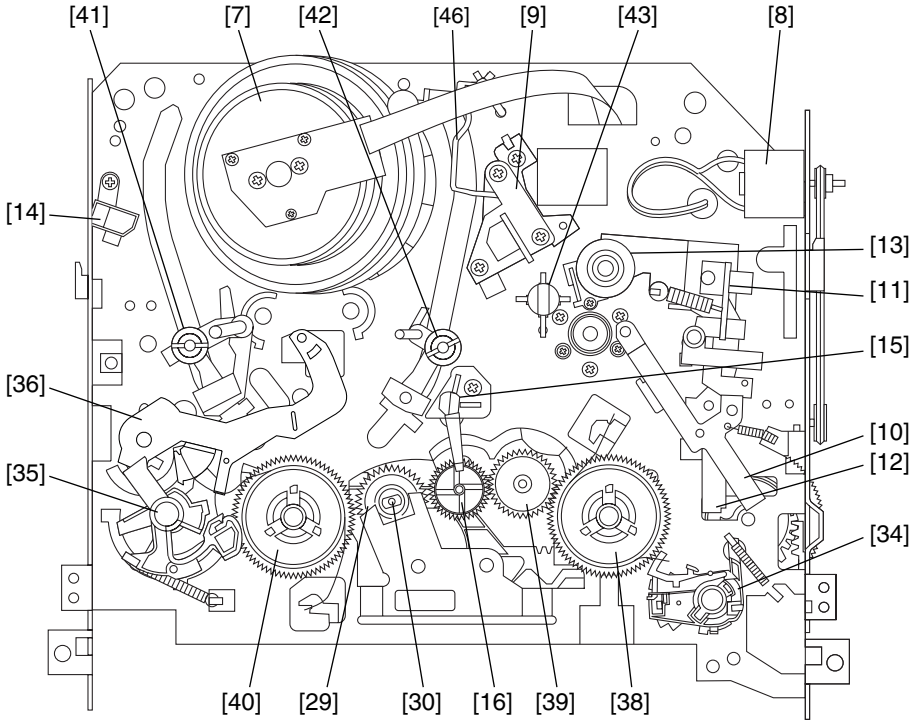


Fig. DM1

Bottom View

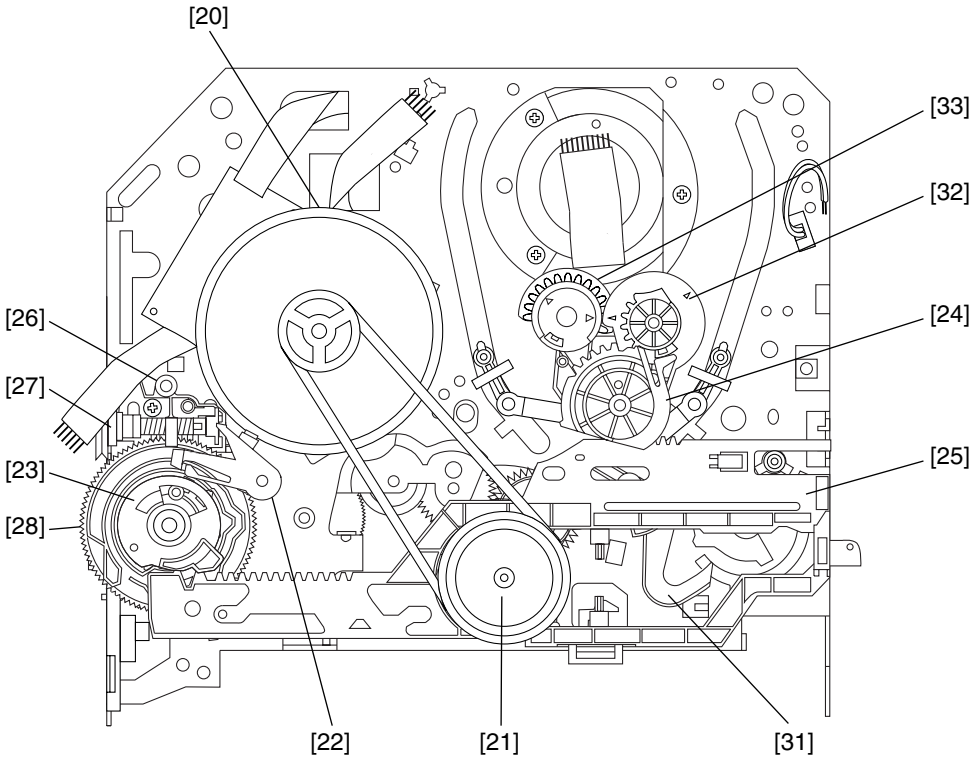


Fig. DM2

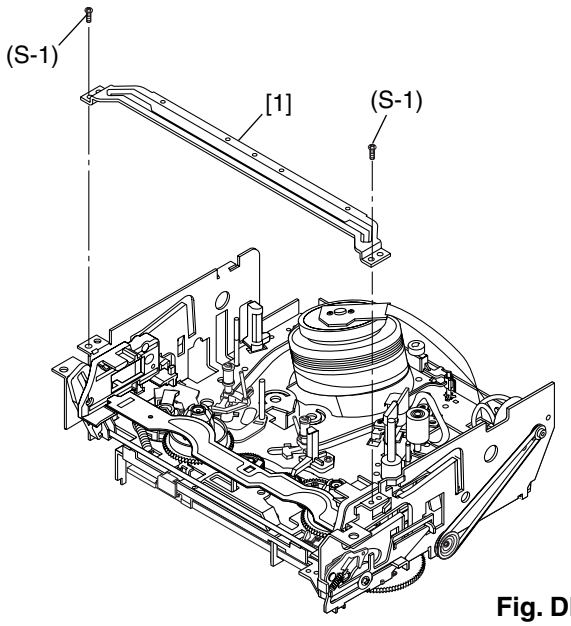
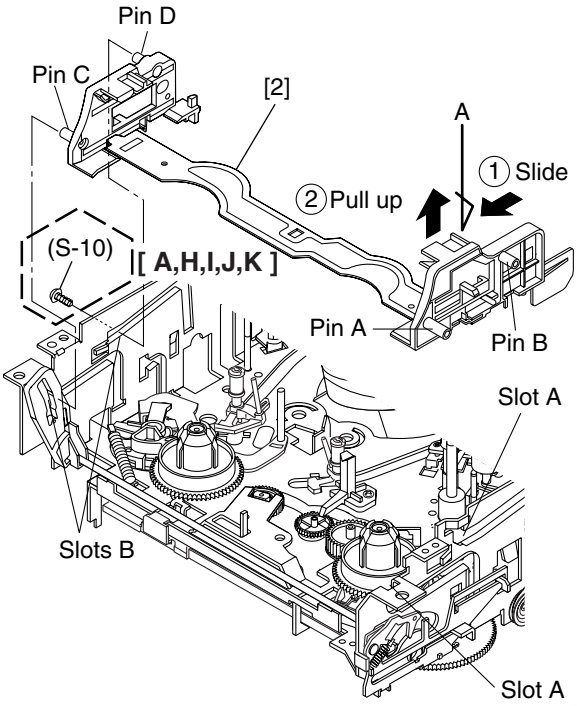


Fig. DM3



First, while pushing the locking tab as shown at right, slide and pull up the right side on [2] to release Pin A and Pin B from the slots A.
Then, remove Pin C and Pin D on [2] from the slots B as shown.

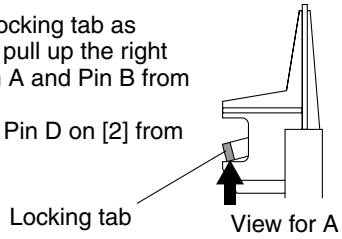
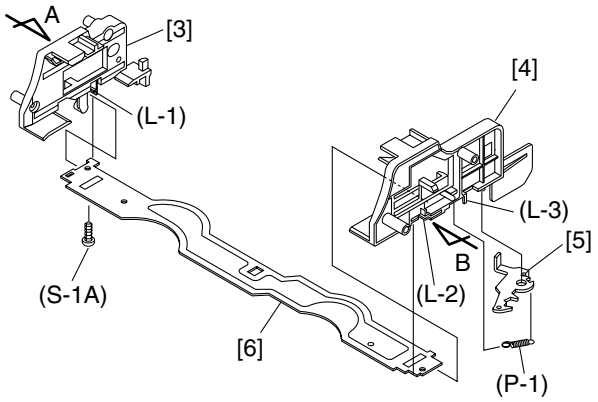
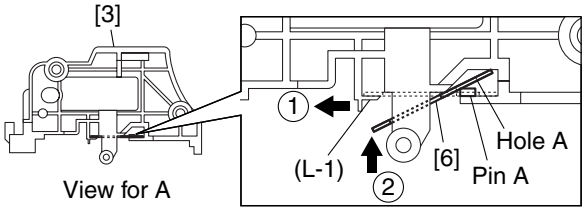


Fig. DM4



Installation of [3] and [6]

First, insert [6] diagonally in [3] as shown below. Then, install [6] in [3] while pushing (L-1) in a direction of arrow. After installing [6] in [3], confirm that pin A of [3] enters hole A of [6] properly.



Installation of [4] and [6]

Install [6] in [4] while pulling (L-2) in a direction of arrow. After installing [6] in [4], confirm that pin B of [4] enters hole B of [6] properly.

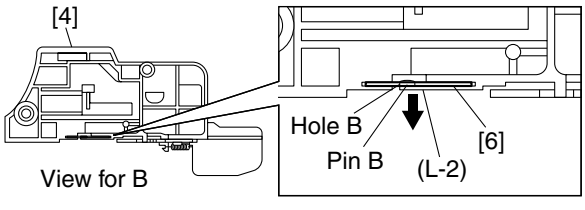


Fig. DM5

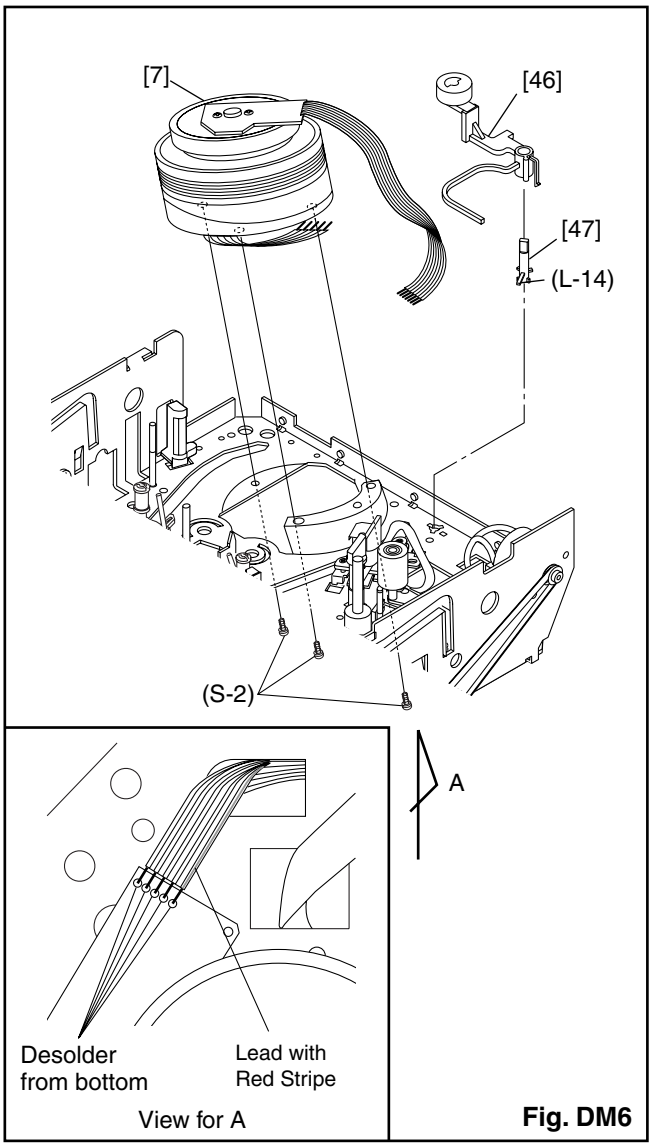


Fig. DM6

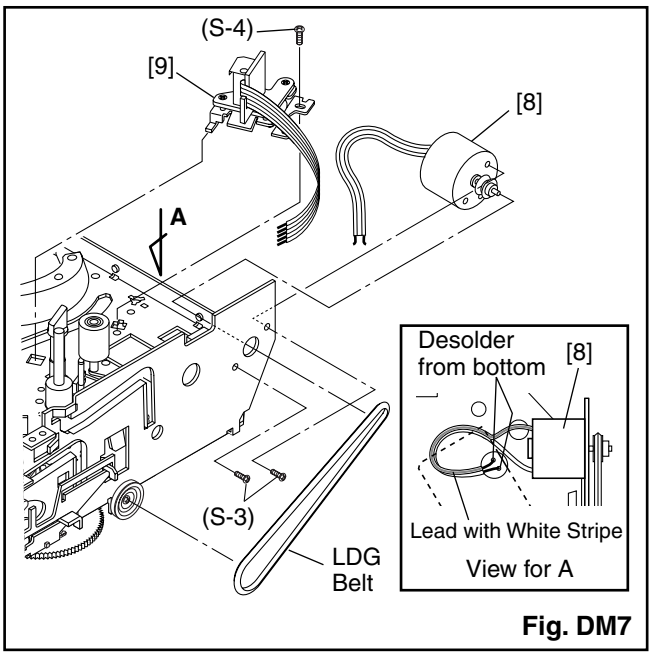


Fig. DM7

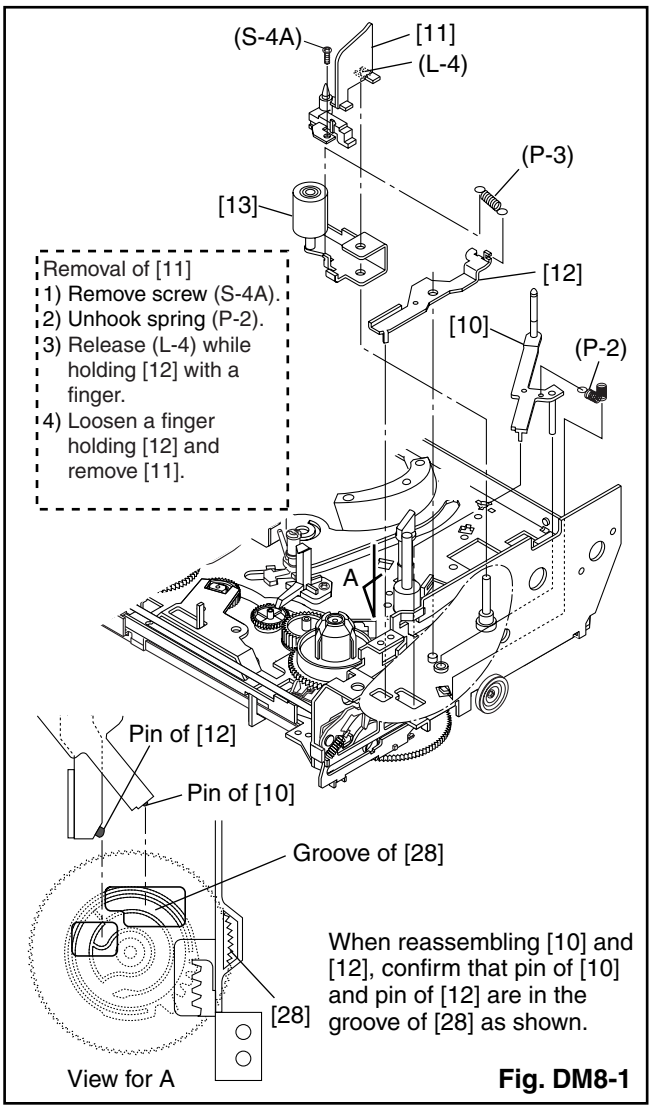


Fig. DM8-1

Installation of [13] and [12]

Hook spring (P-3) up to [12] and [13], then install then to the specified position so that [12] will be floated slightly while holding [12] and [13]. (Refer to Fig. A.)

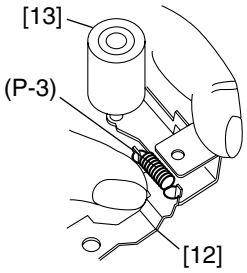


Fig. A

Install pin of [12] in groove of [28]. (Refer to Fig. B.)

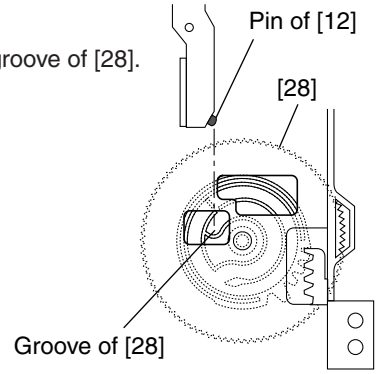


Fig. B (Top view)

Hold [12] and [13] till groove of pin of chassis looks and fit [13] in notch of chassis. Then, turn a few [13] while holding [12]. (Refer to Fig. C.)

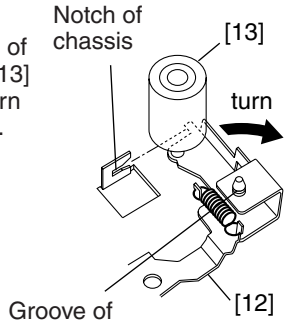


Fig. C

Install [11] and [10] while holding [12]. (Refer to Fig. DM8-1.)

Fig. DM8-2

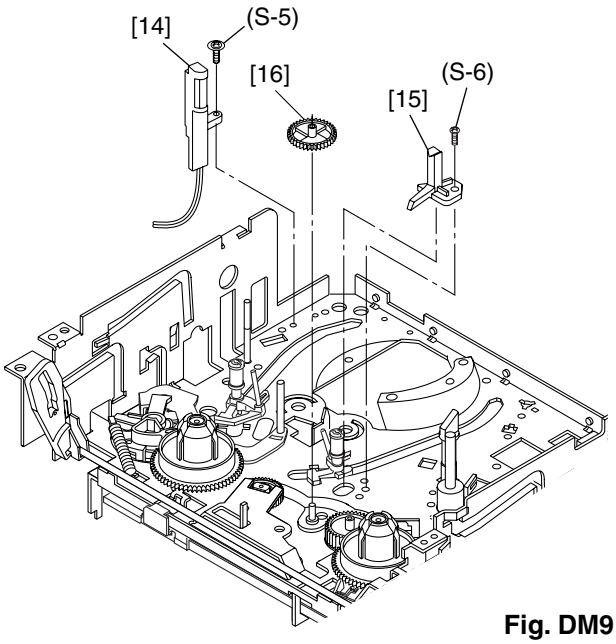


Fig. DM9

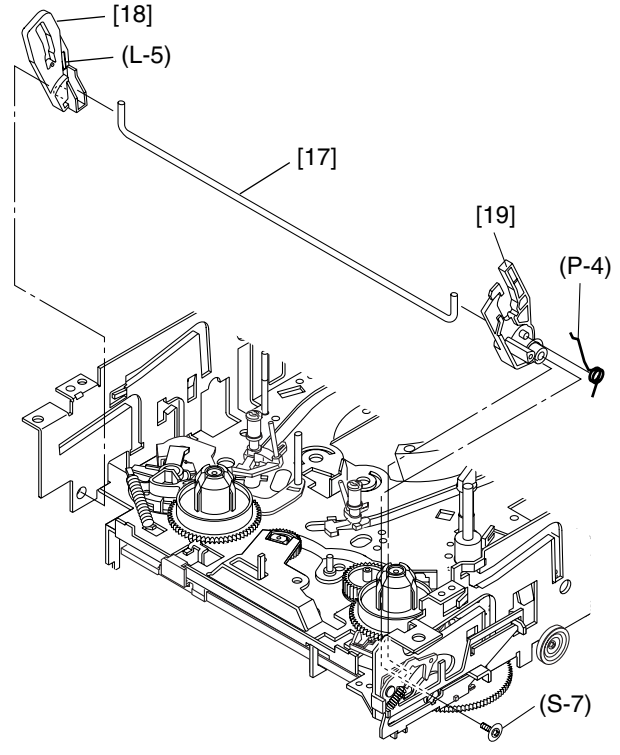
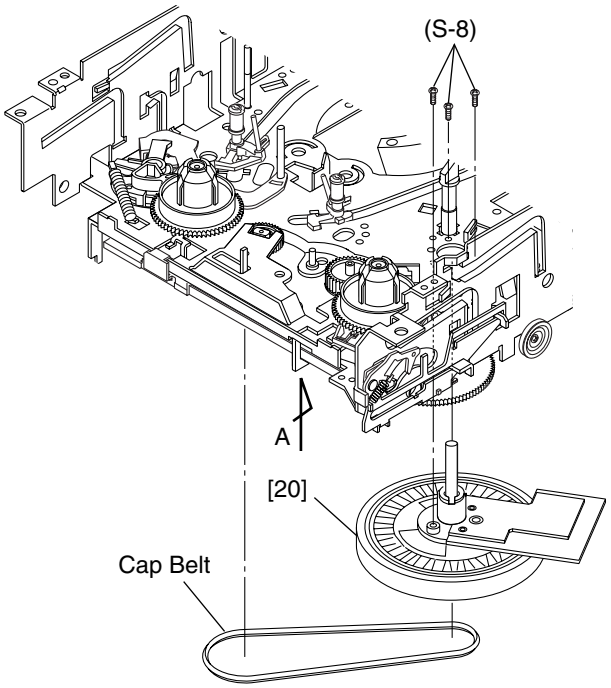
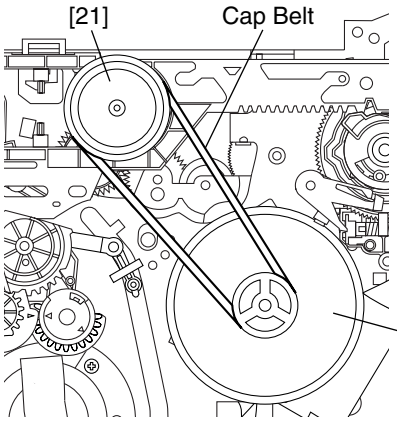


Fig. DM10

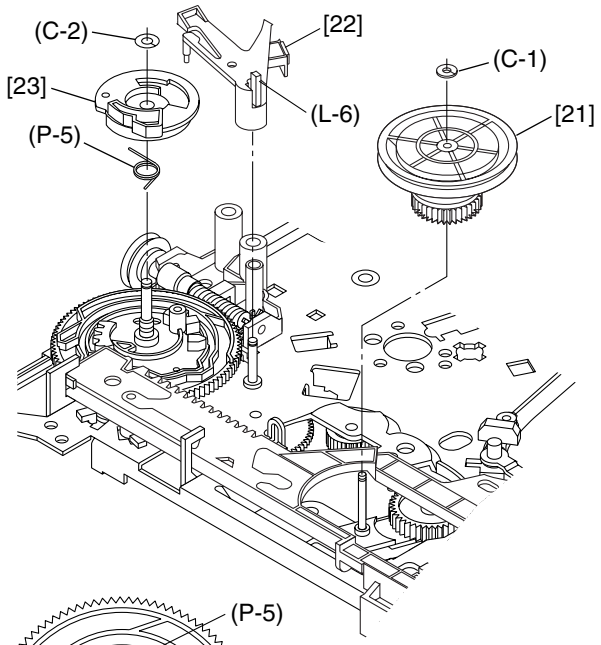


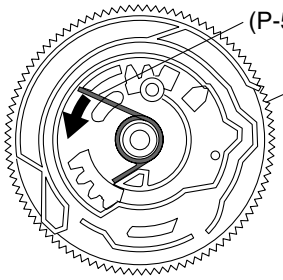
Installation position of Cap Belt



View for A

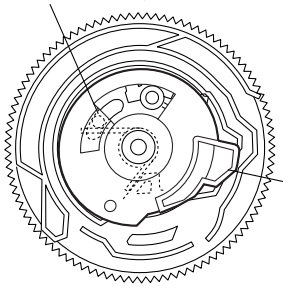
Fig. DM11



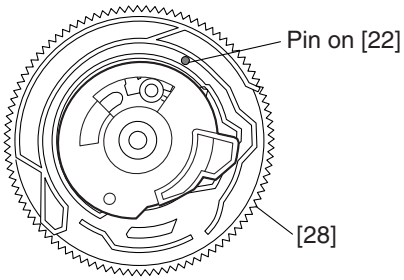


When installing [23], install the spring (P-5) to [28] as shown in the left figure, and then install [23] while pressing the spring (P-5) to the direction of the arrow in the left figure and confirming that the position of the spring (P-5) is placed as shown in the left figure.

Pin on bottom of [23]



Top View



Position of pin on [22]

Fig. DM12

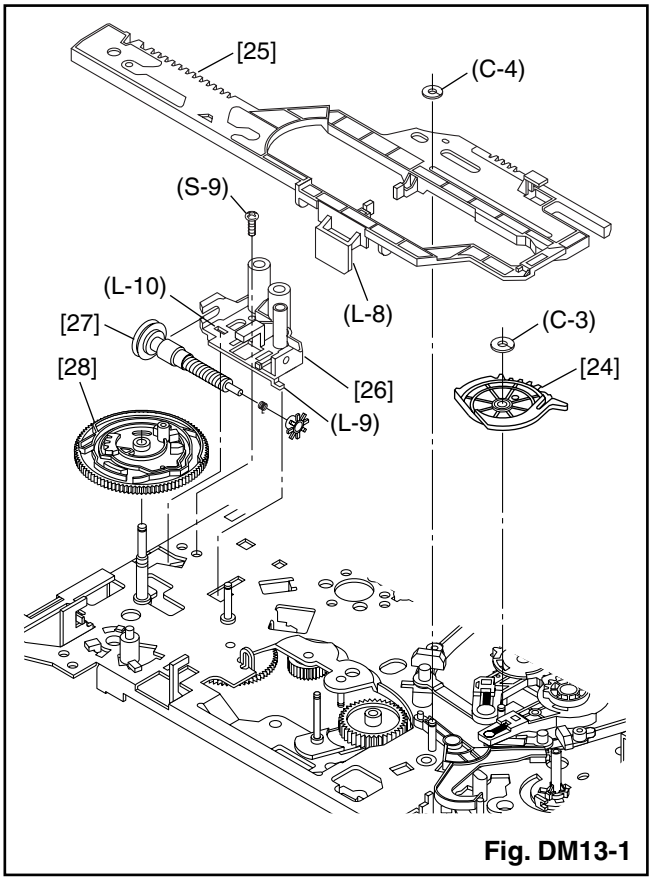
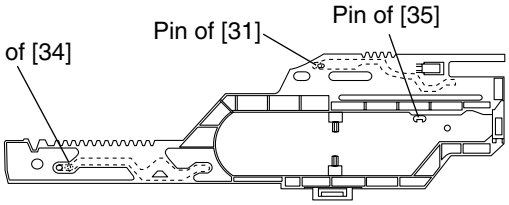
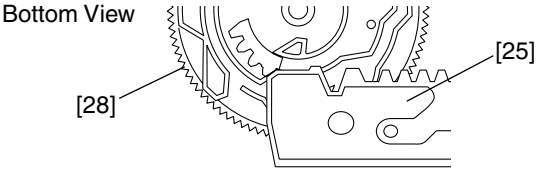


Fig. DM13-1

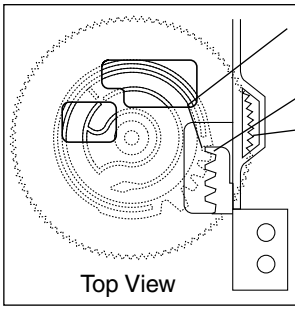
Installation of [25]

Position of Mode Lever when installed





Align [25] and [28] as shown.



When reassembling [28], align the first groove on [28] to the first tooth on [44] as shown.

Fig. DM13-2

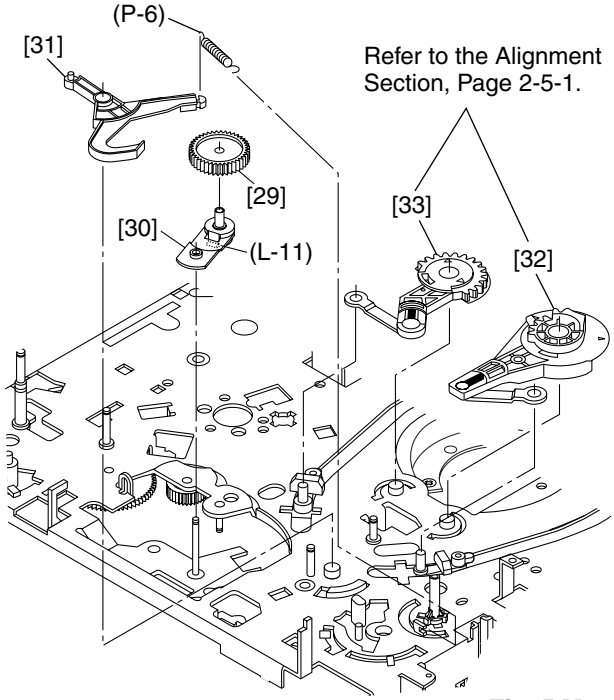


Fig. DM14

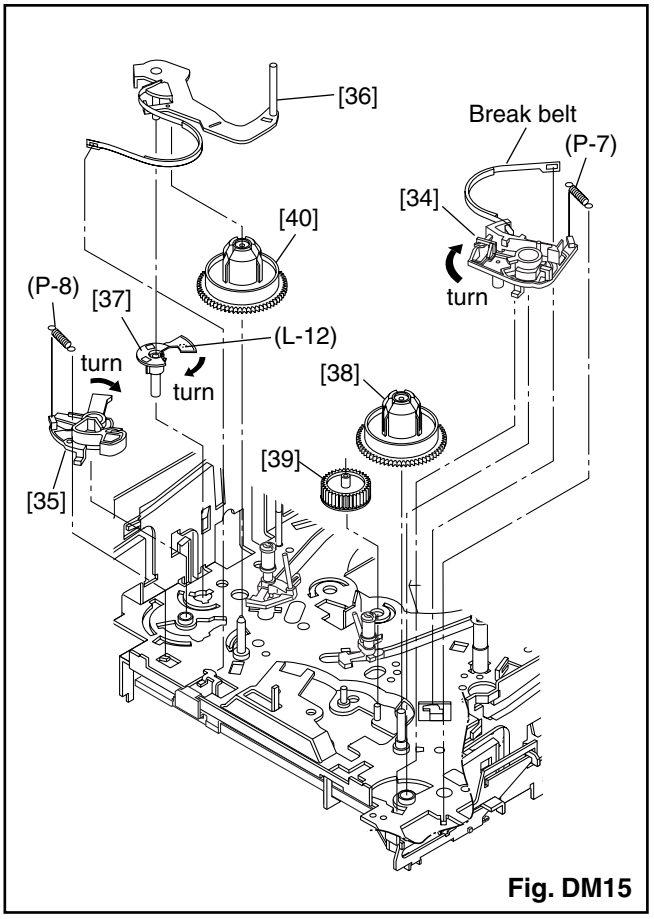


Fig. DM15

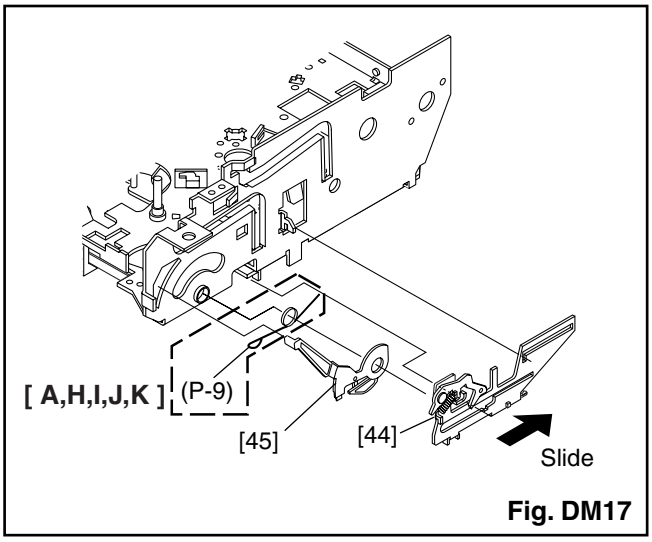


Fig. DM17

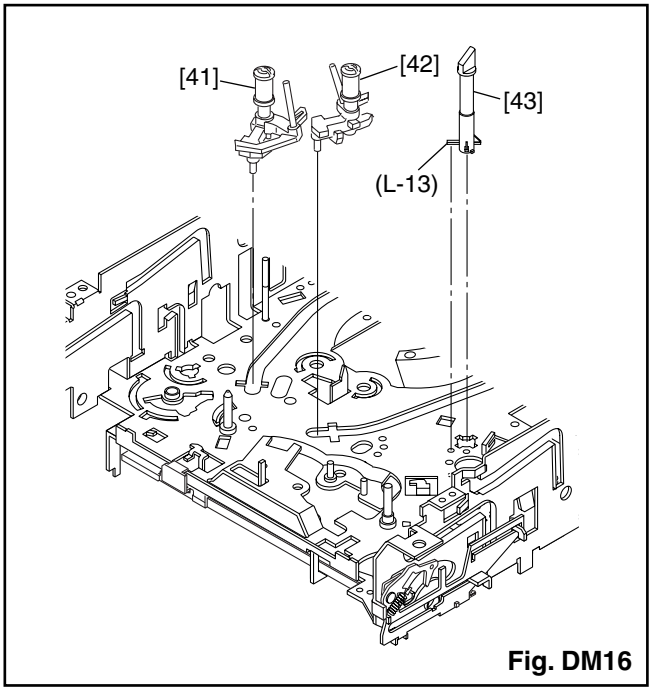


Fig. DM16

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.

All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position

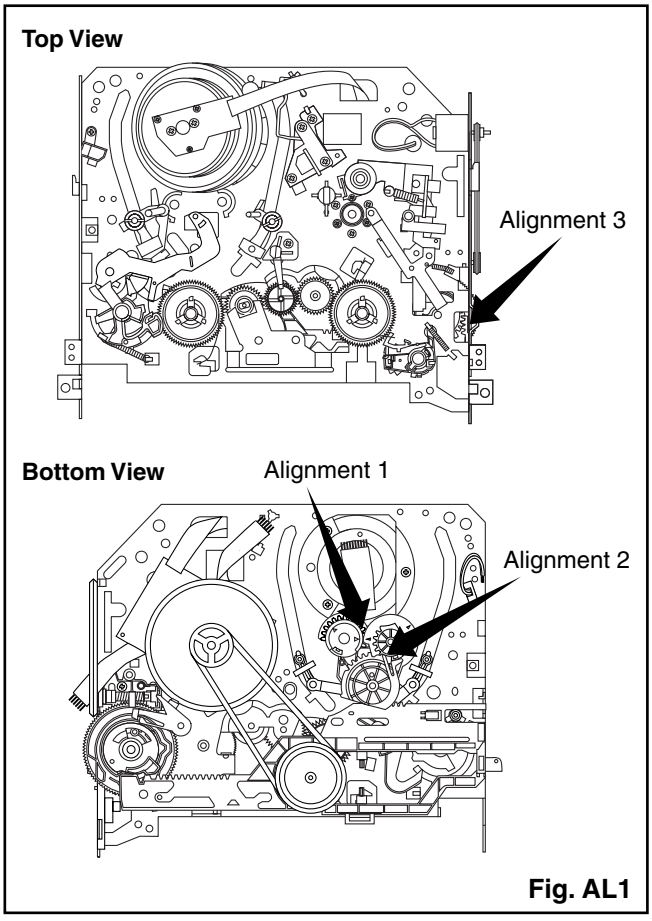


Fig. AL1

Alignment 1

Loading Arm (SP) and (TU) Assembly

Install Loading Arm (SP) and (TU) Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Mode Gear

Keeping the two triangles pointing at each other, install the Loading Arm (SP) Assembly so that the last tooth of the gear meets the most inside teeth of the Mode Gear. See Fig. AL2.

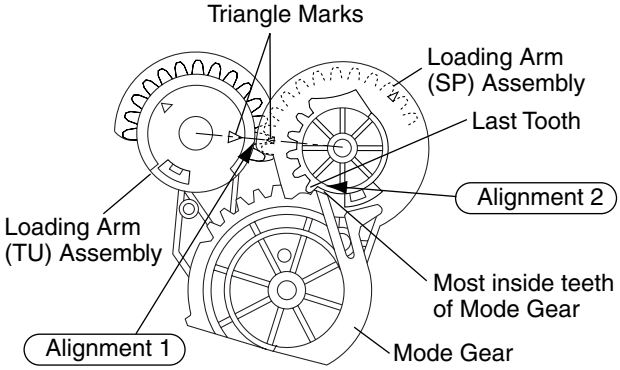


Fig. AL2

Alignment 3

Cam Gear (A), Rack Assembly

Install the Rack Assembly so that the first tooth on the gear of the Rack Assembly meets the first groove on the Cam Gear (A) as shown in Fig. AL3.

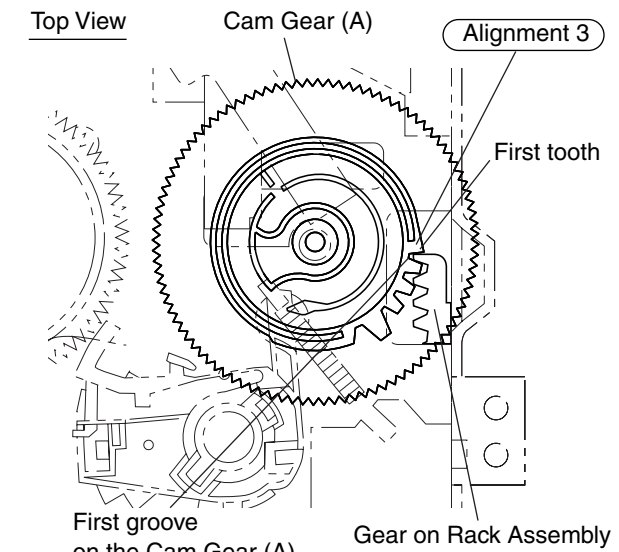
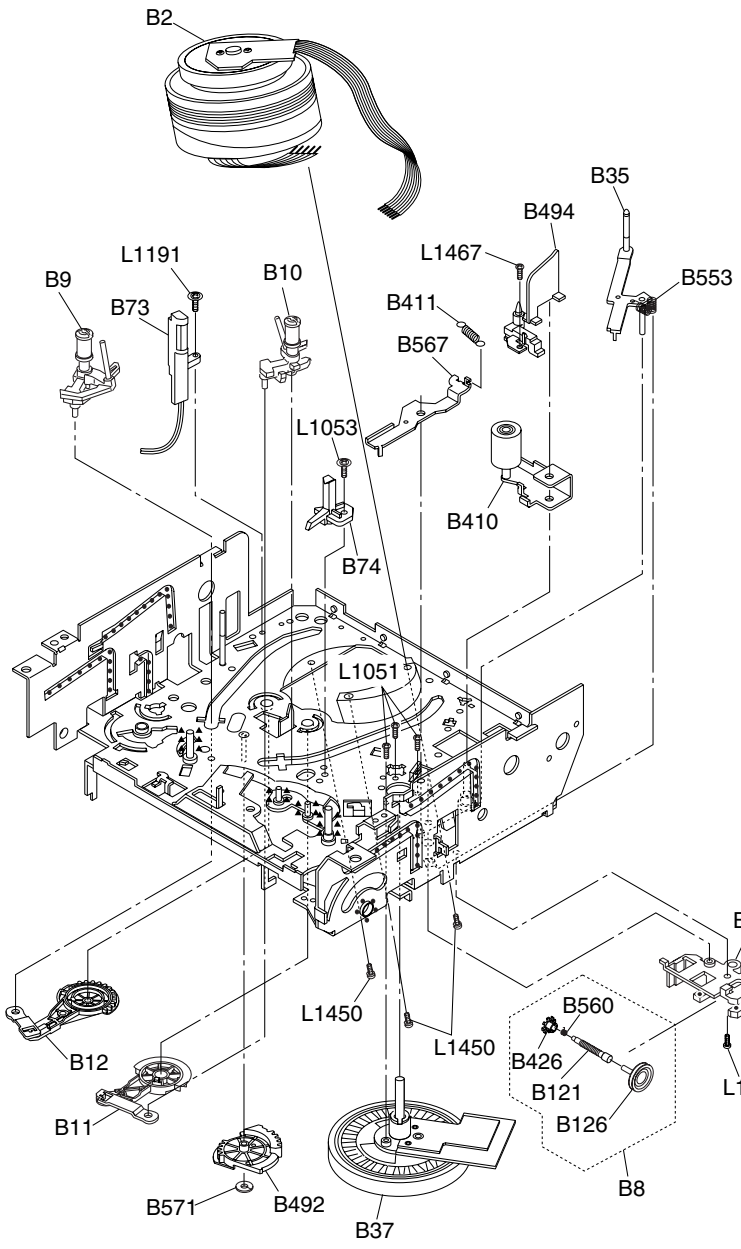


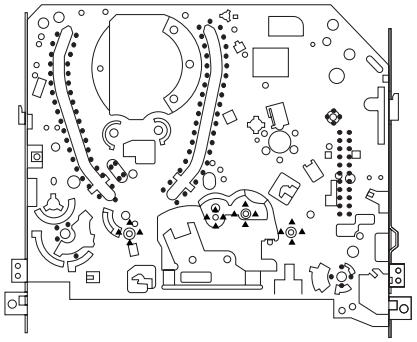
Fig. AL3

DECK EXPLODED VIEWS

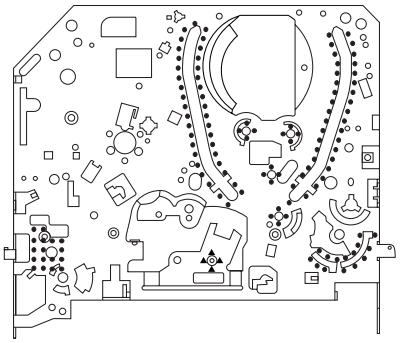
Deck Mechanism View 1

Mark	Description
•••••	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150





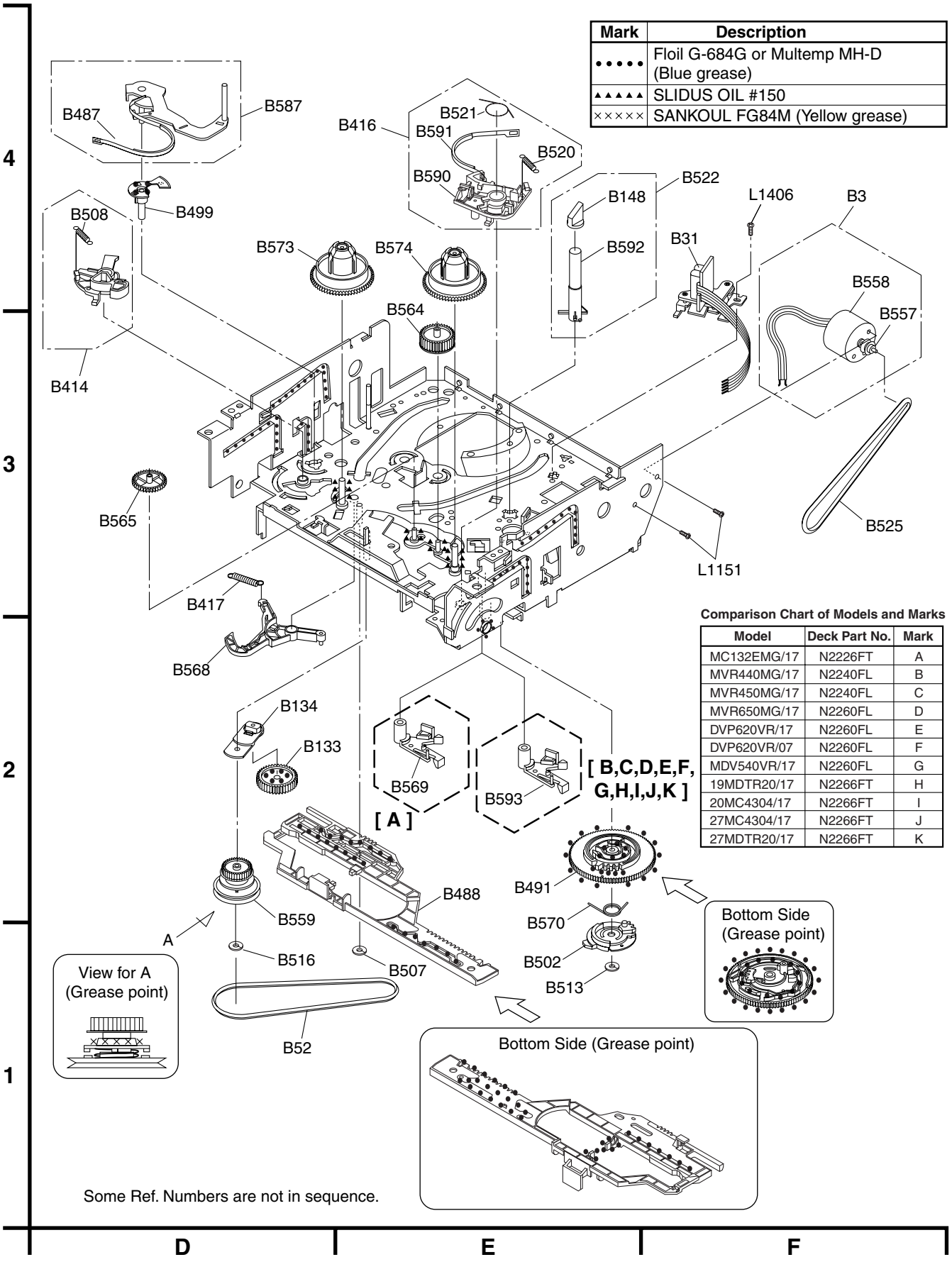
Chassis Assembly
Top View (Lubricating Point)



Chassis Assembly
Bottom View (Lubricating Point)

Some Ref. Numbers are not in sequence.

Deck Mechanism View 2

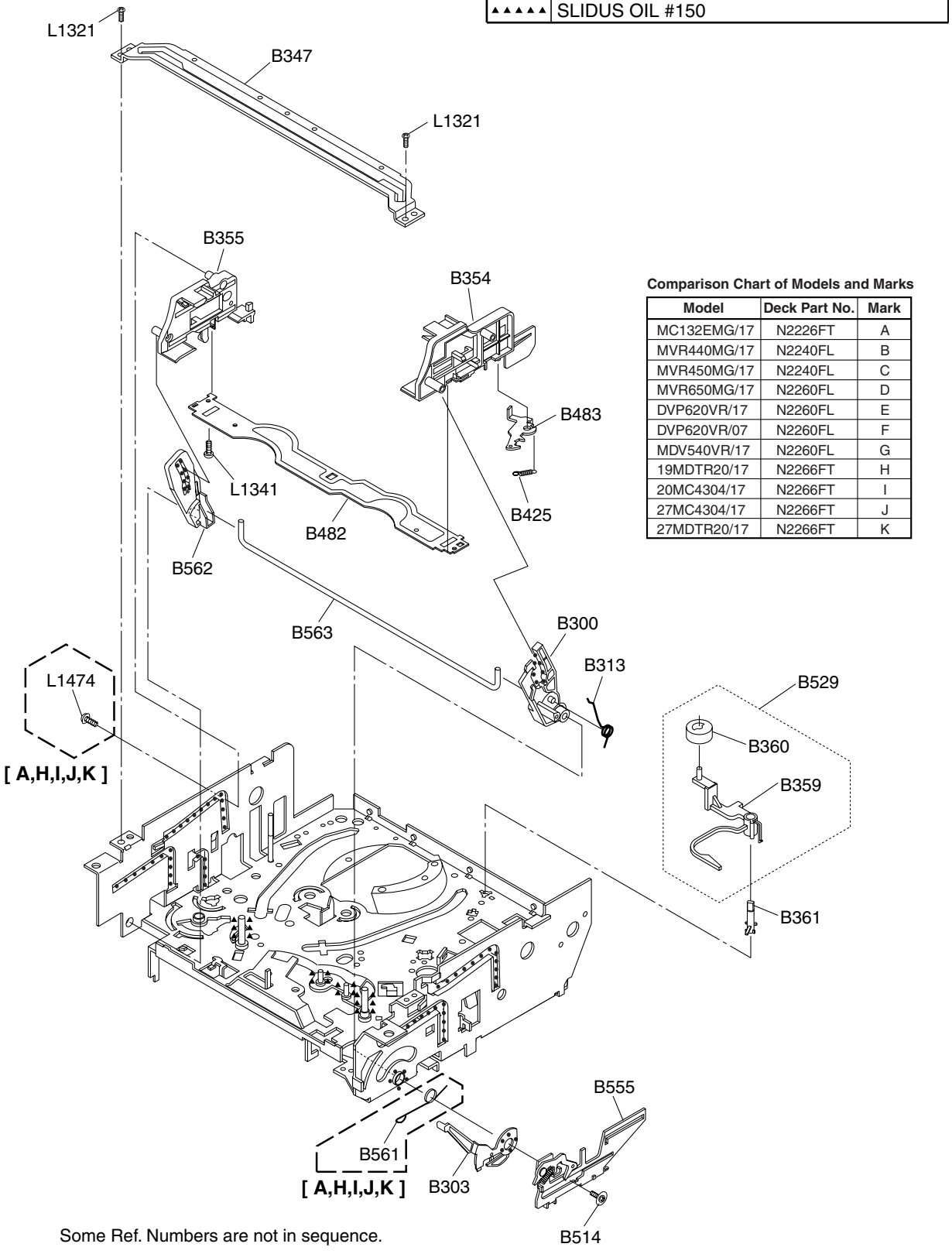


Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

Deck Mechanism View 3

Mark	Description
●●●●●	Floil G-684G or Multemp MH-D (Blue grease)
▲▲▲▲▲	SLIDUS OIL #150



Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

Some Ref. Numbers are not in sequence.

DECK PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that are not assigned part numbers (---- --- ----- or blank) are not normally available.

To order parts call the TOLL FREE Philips Sales Center number: 1 - 800 - 851 - 8885
(In Canada) 1 - 800 - 363 - PART.
1 - 800 - 535 - 3715 (Fax).

Comparison Chart of Models and Marks

Model	Deck Part No.	Mark
MC132EMG/17	N2226FT	A
MVR440MG/17	N2240FL	B
MVR450MG/17	N2240FL	C
MVR650MG/17	N2260FL	D
DVP620VR/17	N2260FL	E
DVP620VR/07	N2260FL	F
MDV540VR/17	N2260FL	G
19MDTR20/17	N2266FT	H
20MC4304/17	N2266FT	I
27MC4304/17	N2266FT	J
27MDTR20/17	N2266FT	K

Ref.	⚠	Mark	Pos.	Description	ID No.	Part No.
B2		A	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 2HD	N2228CYL	4835 691 27327
B2		B,C	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 4HD	N2248CYL	4835 691 27329
B2		D,E,F,G,H,I,J,K	A-4	CYLINDER ASSEMBLY MK12.5 NTSC 6HD	N2268CYL	4835 691 27328
B3			F-4	LOADING MOTOR ASSEMBLY MK12.5	0VSA14636	4835 464 57614
B8			B-2	PULLEY ASSEMBLY MK12	0VSA13500	4835 528 87063
B9			A-3	MOVING GUIDE S P.P MK12.5	0VSA14717	4835 464 57616
B10			A-3	MOVING GUIDE T P.P MK12.5	0VSA14639	4835 464 57615
B11			A-1	LOADING ARM(TU) ASSEMBLY MK12	0VSA13300	4835 464 57607
B12			A-2	LOADING ARM(SP) ASSEMBLY MK12	0VSA13299	4835 464 57606
B31		A,H,I,J,K	F-4	AC HEAD ASSEMBLY(TVCR) MK12.5	0VSA14866	4835 464 57617
B31		B,C,D,E,F,G	F-4	AC HEAD ASSEMBLY MK12.5	0VSA14841	4835 464 57623
B35			B-3	TAPE GUIDE ARM ASSEMBLY MK12.5	0VSA15014	4835 464 57621
B37			B-1	CAPSTAN MOTOR 288/ VCZC1300	N9680CML	4835 362 17046
B52			D-1	CAP BELT MK10	0VM411138	4835 358 37161
B73			A-3	FE HEAD(MK11) MH-131SF11 or	DHVEC01Z0005	4835 249 97074
			A-3	FE HEAD(MK12) VTR-1X2ERS11-155 or	DHVEC01TE005	4835 249 97074
			A-3	FE HEAD(MK12) HVFHP0047A	DHVEC01AL007	4835 249 97074
B74			A-3	PRISM MK10	0VM202870	4835 402 97849
B121			B-2	WORM MK12	0VM414091	4835 522 37411
B126			B-1	PULLEY MK12	0VM414330B	4835 528 87064
B133			D-2	IDLER GEAR MK12	0VM305738	4835 522 37409
B134			D-2	IDLER ARM MK12	0VM305739	4835 402 97883
B148			E-4	TG CAP MK11	0VM412972	---- --- -----
B300			H-2	C DRIVE LEVER(TU) MK12	0VM203773	4835 402 97877
B303			H-1	F DOOR OPENER MK12	0VM203751C	4835 402 97891
B313			H-2	C DRIVE SPRING MK12	0VM414145	---- --- -----
B347			G-4	GUIDE HOLDER A MK10	0VM304920	---- --- -----
B354			H-3	SLIDER(TU) MK12	0VM101172F	4835 402 97889
B355		A,H,I,J,K	G-3	SLIDER(SP) MK12	0VM101182K	4835 402 97875
B355		B,C,D,E,F,G	G-3	SLIDER(SP) MK12	0VM101182H	4835 402 97875
B359			I-2	CLEANER LEVER MK10	0VM304413	4835 402 97845
B360			I-2	CLEANER ROLLER MK9	0VM410032C	4835 464 57553
B361			I-2	CL POST MK10	0VM411114	4835 464 57559
B410			B-3	PINCH ARM(A) ASSEMBLY(6) MK12.5 or	0VSA14935	4835 464 57618
			B-3	PINCH ARM(A) ASSEMBLY(5) MK12	0VSA13788	4835 402 97887
B411			B-3	PINCH SPRING MK12	0VM414644	---- --- -----
B414			D-4	M BRAKE(SP) ASSEMBLY MK12.5	0VSA14994	4835 464 57619
B416			E-4	M BRAKE(TU) ASSEMBLY MK12	0VSA13283	4835 464 57601
B417			D-3	TENSION SPG(3002645) MK12	0VM414221F	---- --- -----
B425			H-3	LOCK LEVER SPRING MK10	0VM411110	---- --- -----
B426			B-2	KICK PULLEY MK10	0VM411095	4835 528 87061
B482			H-3	CASSETTE PLATE MK12	0VM203749	4835 402 97873
B483			H-3	LOCK LEVER MK12	0VM414095	4835 402 97884
B487			D-4	BAND BRAKE(SP) MK12	0VM305723	4835 466 47059
B488			E-2	MODE LEVER MK12.5	0VM101351	4835 402 97896
B491			E-2	CAM GEAR(A) MK12	0VM101174	4835 522 37404
B492			A-1	MODE GEAR MK12	0VM203769	4835 522 37405
B494			B-3	C DOOR OPENER MK12	0VM305719	4835 402 97879
B499			D-4	T LEVER HOLDER MK12	0VM305729	---- --- -----
B501			B-2	WORM HOLDER MK12	0VM203767	---- --- -----
B501		B,C,D,E,F,G	B-2	WORM HOLDER(R) MK12	0VM204324	---- --- -----
B502			E-1	CAM GEAR(B) MK12	0VM305721	4835 522 37406
B507			E-1	REEL WASHER MK9 5*2.1*0.5	0VM410058	---- --- -----
B508			D-4	S BRAKE SPRING MK10	0VM411121	---- --- -----
B513			E-1	CAM WASHER MK12	0VM414741	---- --- -----
B514			H-1	SCREW RACK MK10	0VM411535	---- --- -----
B516			D-1	REEL WASHER MK9 5*2.1*0.5	0VM410058	---- --- -----
B520			E-4	TU BRAKE SPRING MK12	0VM414285	---- --- -----
B521			E-4	REV BRAKE SPRING MK12	0VM414222	---- --- -----
B522			E-4	TG POST ASSEMBLY MK11	0VSA12080	4835 464 57584
B525			F-3	LDG BELT MK11	0VM412804	---- --- -----
B529			I-2	CLEANER ASSEMBLY MK10	0VSA11161	4835 464 57561
B553			B-3	REV SPRING MK11	0VM412555	---- --- -----
B555			H-1	RACK ASSEMBLY MK12	0VSA13289	4835 464 57605
B557			F-3	MOTER PULLEY U5	0VM403205	4835 528 87036
B558			F-3	LOADING MOTOR M31E-1 R-14 7401	MMDZB12MM007	4835 361 27171
B559			D-2	CLUTCH ASSEMBLY MK12 or	0VSA13284	4835 464 57602
			D-2	CLUTCH ASSEMBLY(64) MK12	0VSA14459	4835 464 57613
B560			B-2	KICK SPRING MK10	0VM411475A	---- --- -----
B561		A,H,I,J,K	H-1	F DOOR SPRING MK10	0VM411430	---- --- -----
B562			G-3	C DRIVE LEVER(SP) MK12	0VM203772	4835 402 97876
B563			H-3	SLIDER SHAFT MK12	0VM305762	4835 535 97031
B564			E-3	M GEAR MK12	0VM305735	4835 522 37407
B565			D-3	SENSOR GEAR MK12	0VM305736	4835 522 37408
B567			B-3	PINCH ARM(B) MK12	0VM305718	4835 402 97878
B568			D-2	BT ARM MK12	0VM305728	4835 402 97882
B569		A	E-2	CAM HOLDER(F) MK12 or	0VM305722	---- --- -----
		A	E-2	CAM HOLDER MK12.5	0VM306618	---- --- -----
B570			E-2	CAM RACK SPRING(HI) MK11	0VM412923	---- --- -----

Ref.	⚠	Mark	Pos.	Description	ID No.	Part No.
B571			A-1	P.S.W CUT 1.6X4.0X0.5T	0VM408485A	---- --- -----
B573			E-4	REEL(SP)(D2) MK12	0VM203755	4835 528 17057
B574			E-4	REEL(TU)(D2) MK12	0VM203756	4835 528 17058
B587			D-4	TENSION LEVER ASSEMBLY MK12	0VSA13279	4835 464 57598
B590			E-4	BRAKE ARM(TU) MK12	0VM203752E	4835 402 97892
B591			E-4	BAND BRAKE(TU) MK12	0VM305724C	4835 466 47062
B592			E-4	TG POST MK11	0VM412550	4835 464 57596
B593		B,C,D,E,F,G,H,I,J,K	E-2	CAM HOLDER ASSEMBLY MK12.5	0VSA14634	4835 464 57622
L1051			A-2	SCREW, B-TIGHT M2.6X6 PAN HEAD+	GPMB9060	---- --- -----
L1053			A-3	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080	---- --- -----
L1151			F-3	SCREW, SEMS M2.6X4 PAN HEAD+	CPM39040	---- --- -----
L1191			A-3	SCREW, S-TIGHT M2.6X8 WASHER HEAD+	GCMS9080	---- --- -----
L1321			G-4, H-4	SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060	---- --- -----
L1341			G-3	SCREW, P-TIGHT M2X6 PAN HEAD+	GPMP2060	---- --- -----
L1406			F-4	AC HEAD SCREW MK9	0VM410964	---- --- -----
L1450			A-2, B-2	SCREW, SEMS M2.6X5 PAN HEAD+	CPM39050	---- --- -----
L1466			B-2	SCREW, S-TIGHT M2.6X6 BIND HEAD+	GBMS9060	---- --- -----
L1467			B-3	SCREW M2.6X5 WASHER HEAD+	SCM39050	---- --- -----
L1474		A,H,I,J,K	G-2	SCREW, P-TIGHT M2.6X12 WASHER HEAD+	GCMP9120	---- --- -----

DVD-Video Recorder

DVD+RW Basic Engine

VAD8041

Service
Service
Service

Service Manual

CLASS 1
LASER PRODUCT

DVD+ReWritable

Contents **Page**

1	Technical Specifications		2
2	Safety Instructions, Warnings and Notes		3
3	Directions for Use(No DFU necessary)		4
4	Mechanical Instructions		5
5	Service Modes, Error Codes and Fault Finding		8
6	*Block Diagrams, Waveforms, Wiring Diagram*		*13*
	Block Diagram		13
	Testpoints Overview		14
7	*Electrical Diagrams and Print-Layouts*		*Diagram*
	Servo Board: OPU Interface	(Diagram 1)	15
	Servo Board: Cheetah	(Diagram 2)	16
	Servo Board: Laconic	(Diagram 3)	17
	Servo Board: Drivers	(Diagram 4)	18
	Servo Board: Centaurus	(Diagram 5)	21
	Servo Board: Power, Connectors	(Diagram 6)	26
	Servo Board: Tray Motor Conn.	(Diagram 7)	27
8	Alignments (No alignments necessary)		31
9	Circuit-, IC Descriptions and List of Abbreviations		33
10	Electrical Parts List		47

©Copyright 2004 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by GH03 0495 Service PaCE Printed in the Netherlands Subject to modification EN 3122 785 14850

PHILIPS

1. Technical Specifications and Connection Facilities

1.1 VAD8041 functionality:

- Loading of 8 cm and 12 cm discs by a motorized tray
- Disc type recognition and in case of a DVD+RW disc laser power calibration
- Servo control for disc rotation, sledge movements, tilt, focus and actuator position
- EFM+ encoding / decoding for DVD, and EFM decoding for CD
- Writes and read DVD+RW discs and reads DVD, CD and CD-R/RW discs
- Linking control, header insertion and sector number updating at record
- Interfacing to the MPEG back-end for control and for data
- The back-end has to provide MPEG data processing, data buffering, construction of logical format for Lead-in, Data area and Lead-out part of the DVD+RW disc

1.2 Connections

The following interfaces are provided for connecting the drive to the MPEG back-end Application:

- Power Connector: 4-pin supply interface
- IDE Connector: 40-pin command and data transfer interface
  IDE Bus selection:
- Jumper Selection: 6-pin IDE Bus selector

1.3 Read and Write Speeds

Type of Disc (Function)	Disc Rotation Speed
Read Speed CD	CAV 7x
Read Speed DVD	CAV 4x
Write Speed DVD+RW	ZCAV 2.4x
Write Speed DVD+R	ZCAV 2.4x

2. Safety Instructions, Warnings and Notes

2.1 Safety Instructions

2.1.1 General Safety

Safety regulations require that during a repair:
- Connect the unit to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:
- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
  1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
  3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
  5. Verify this, before you return the unit to the customer/ user (ref. UL-standard no. 1492).
  6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	:	Semiconductor laser GaAlAs
Wavelength	:	650 nm (DVD)
	:	780 nm (VCD/CD)
Output Power	:	20 mW (DVD+RW writing)
	:	0.8 mW (DVD reading)
	:	0.3 mW (VCD/CD reading)
Beam divergence	:	60 degree

Figure 2-1 Class 1 Laser Product

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2.2 Warnings

2.2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- Be careful during measurements in the live voltage section. The primary side of the power supply (pos. 1005), including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off'!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

2.2.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VARO! AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Figure 2-2 Warning text

3. Directions For Use

Not applicable

4. Mechanical Instructions

Note that exploded views can be found in chapter 10

4.1 General

Follow the dismantling instructions in described order.
Never touch the lens of the OPU.
Take sufficient ESD measures during handling.

4.2 Dismantling

You can divide the Basic Engine into the following parts:
1. Loader (frame and tray)
2. PWB
3. DVD-Mechanism (OPU, traverse with turntable motor and sledge-motor assy)
4. Encasing

4.3 Cabinet

– Remove the encasing by releasing the four screws at the underside of the drive, see figure 4-1
– Make sure that you do not lose the 5 heat paths (gray rubber pieces that conduct the heat from the ICs to the case)!
– If you need to measure on the PCB while a disc is inserted, the top case should be applied again onto the drive. In this way the clamping mechanism is established.

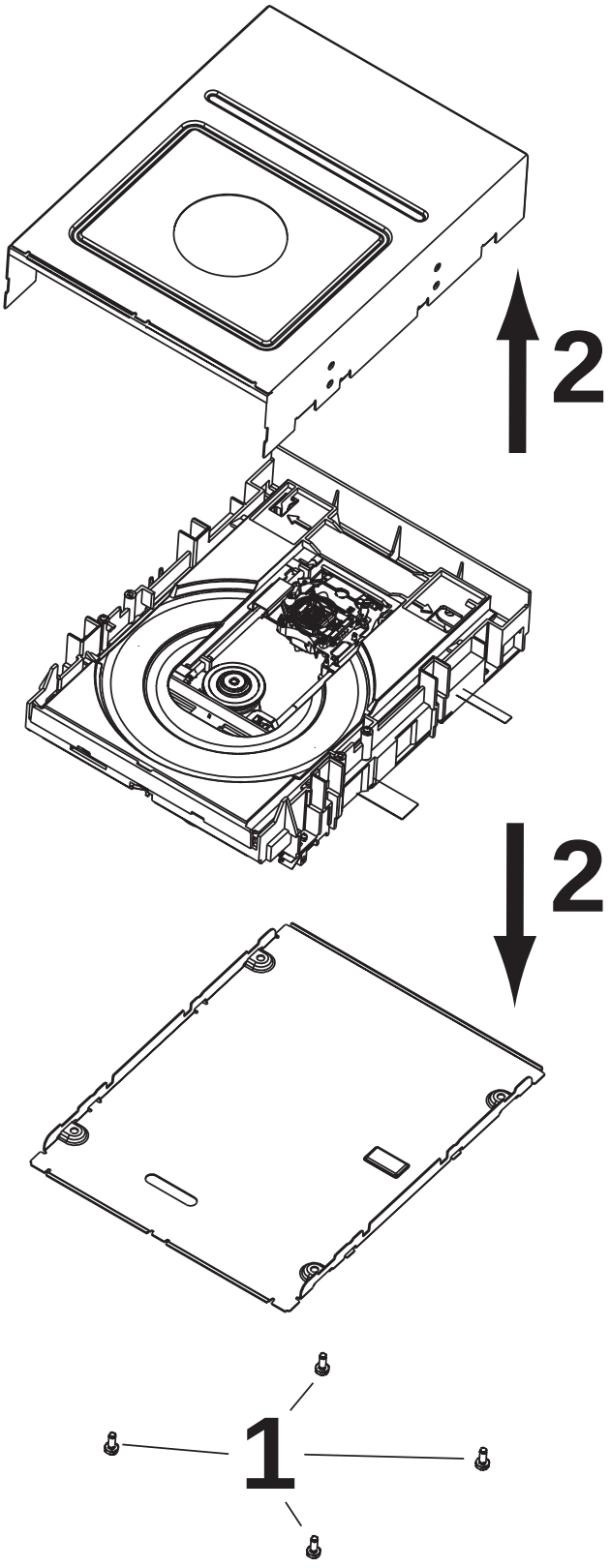


Figure 4-1 Basic Engine dismantling (part1)

4.4 Tray

– Remove encasing as as described in 4.3
– Disengage the two holders that fix the tray [1], see figure 4-2, and pull out the tray [2]

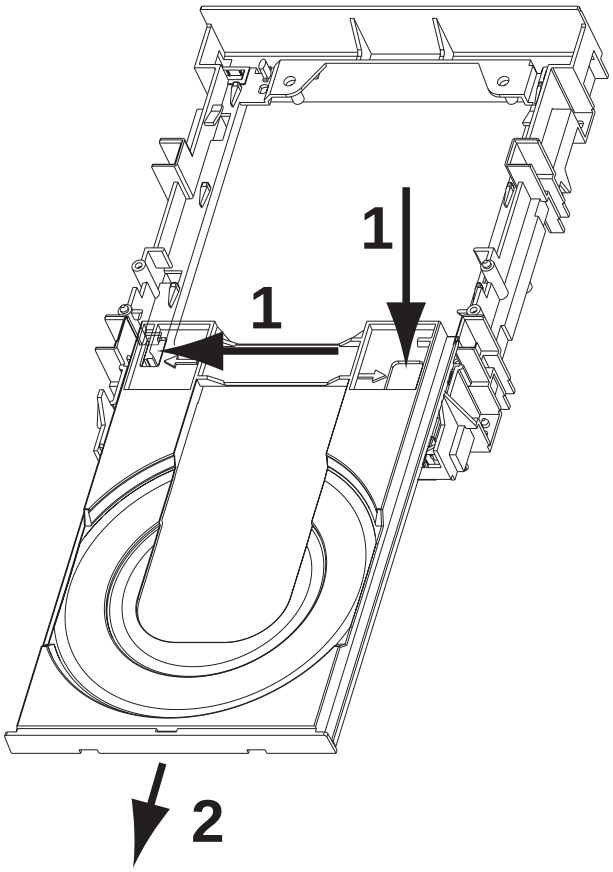


Figure 4-2 Remove Tray

4.5 Printed Board

Note: After exchanging the PWB (or the DVD-M) the complete drive has to be adjusted! Run command 931 of DSW (AdjustLaserControl). Refer to chapter 8 for adjustment instructions!
– Remove encasing as described in 4.3
– Disconnect the 2 flex foils from the PWB connectors and the OPU flex
– Remove the 2 screws that hold the PWB, see figure 4-3
– Remove the PCB
– Remove the yellow plate if needed by releasing the 2 snap hooks

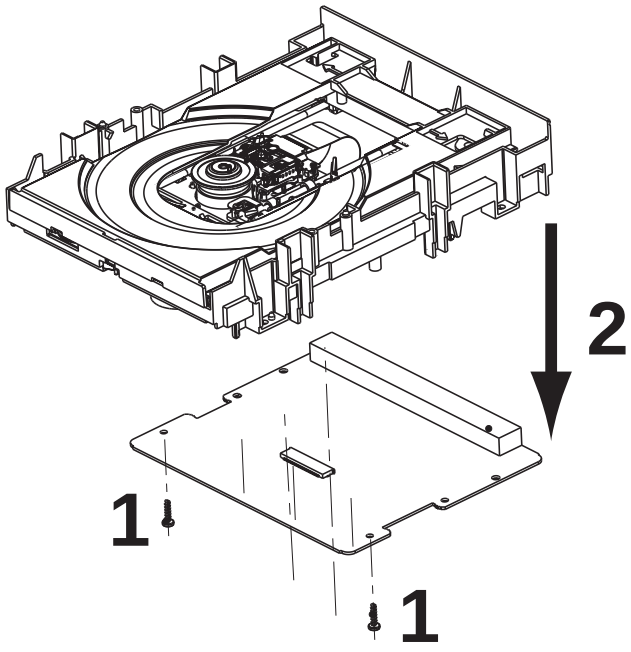


Figure 4-3 Remove PWB

4.6 DVD-M

Caution: Never try to align or repair the DVD-Module itself! Only the factory can do this properly. Service engineers are only allowed to exchange the sledge motor assy.
After Exchanging the DVD-M (or the PWB) the complete drive has to be adjusted! Run command 931 of DSW (AdjustLaserControl). Refer to chapter 8 for adjustment instructions!
– Remove PCB as described in 4.5
– Remove the four screws [1], see figure 4-4.
– Now you can remove the DVDM

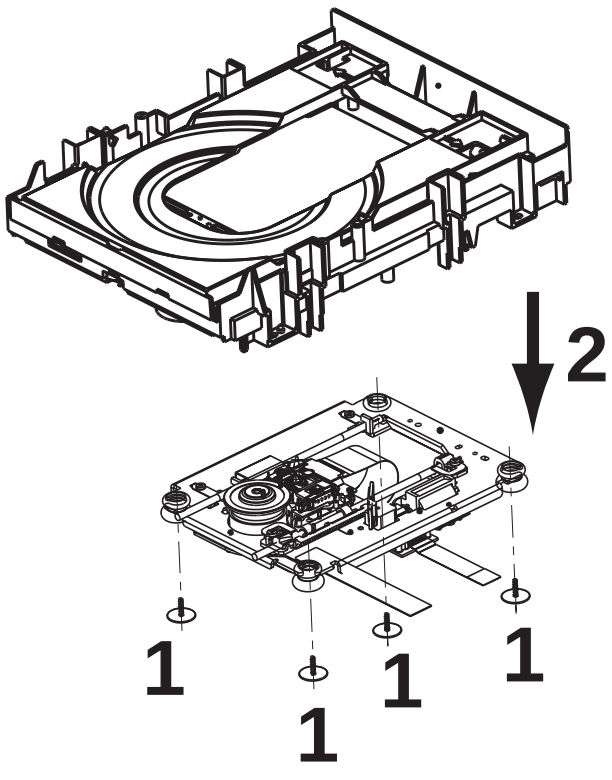


Figure 4-4 Remove DVDM

4.7 Sledge Motor Assembly

Caution: Never try to align or repair the DVD-Module itself! Only the factory can do this properly. Service engineers are only allowed to exchange the sledge motor assy.

– Eject the tray.
– Remove the 2 screws that hold the sledge motor, see figure 4-5
– Remove the sledge motor

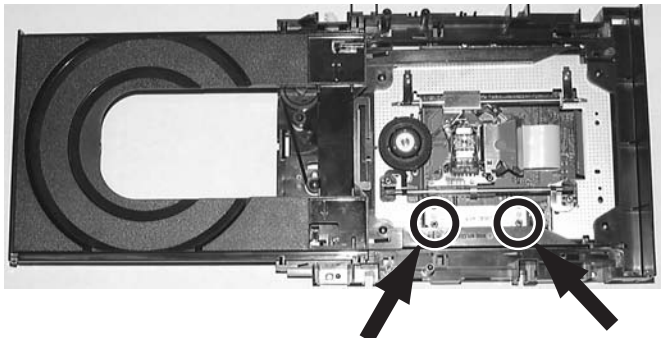


Figure 4-5 Remove Sledge Motor Assy

4.8 Re-assembly

To re-assemble the module, do all processes in reverse order. Take care of the following:

- **Complete module:** Place all wires/cables in their original position
- **Heat Paths:** Put the 5 heat paths (gray rubber pieces) back to their position on the ICs, see figure 4-6.
- **Emergency opening slot:** Be sure that the slot for the emergency tray opener is covered by adhesive tape!
- **Jumper selection:** Jumper has to be in position "Master"!

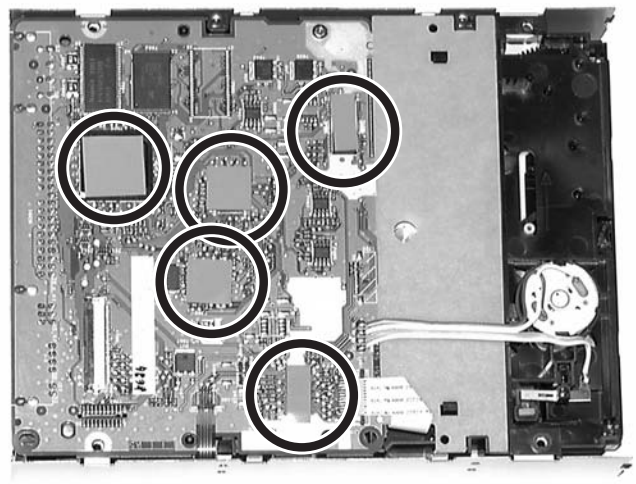


Figure 4-6 Heat Path

5. Service Modes, Error Codes and Fault Finding

5.1 General

Please refer to the service manual of the recorder for a description of the complete Diagnostics Software. In this manual only drive specific error codes are explained.

5.2 Self test

A power on self-test is incorporated in the software of this drive. With DSW command 902 (Chrysalis Mpeg Codec) the set software can retrieve the result of the self-test.

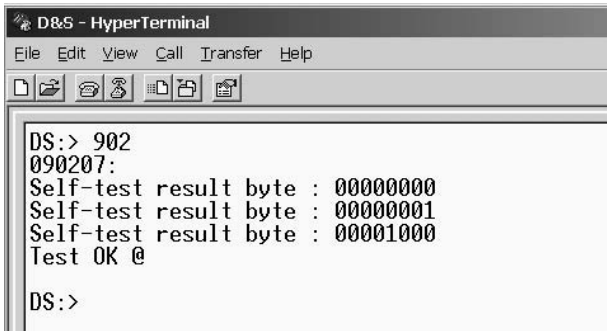


Figure 5-1 Example, nucleus 902 showing no communication with the OPU

Following table gives the output format of this nucleus.

Bit / Byte	7	6	5	4	3	2	1	0
0	Reserved				tray*	ttm*	pcs*	laser forward sense
1	Reserved			real dsp*	hdr80	cheetah	laconic	elantec
2	Reserved				eeprom	eeprom checksum*	eeprom empty*	iic

*error code not detected in VAD8031/VAD8041

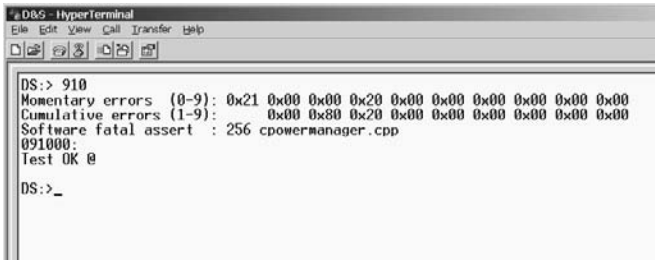
Forward Sense Tests if the forward sense value measured during drive startup is within normal range
HDR80 Performs a read/write test on a register (HDR 80 is an internal module of Centaurus)
Cheetah Performs a read/write test on a register
Laconic Read the IC version (fixed) and checks if it's ok
Elantec Performs a read/write test on a register
Eeprom Performs a read/write test on an address
I2C Tries addressing all I2C devices in the system - if one fails, this test fails

Please note that if the I2C test fails, most other IC tests will fail as well.

Figure 5-2 Self test Results

5.3 Error Codes

With DSW command 910 (Digital Board Chrysalis) the set software can retrieve an overview of all occurred engine errors.


D&S - HyperTerminal
File Edit View Call Transfer Help
DS:> 910
Momentary errors (0-9): 0x21 0x00 0x00 0x20 0x00 0x00 0x00 0x00 0x00 0x00
Cumulative errors (1-9): 0x00 0x80 0x20 0x00 0x00 0x00 0x00 0x00 0x00
Software fatal assert : 256 cpowermanager.cpp
091000:
Test OK @
DS:>_

5.3.1 Momentary Errors

Byte 0: latest error:

Overview of the BE error codes.

error code	error	meaning
0x00	no_error	No error has occurred
0x01	illegal_command_error	Command not allowed in this state or unknown command
0x02	illegal_parameter_error	Parameter(s) not valid for this command
0x03	command_timeout_error	The maximum execution time for the command has exceeded
0x04	sledge_home_error	The sledge could not be moved home
0x05	sledge_calibration_error	An error occurred during calibration of the sledge
0x06	sledge_unstable_error	The sledge detected unstable control
0x07	speed_timeout_error	Spindle motor could not reach its target speed within timeout
0x08	speed_window_error	Measured spinning speed is not within expected window
0x09	focus_timeout_error	Focus could not be achieved within the timeout
0x0A	focus_retries_error	The amount of focus retries expired
0x0B	focus_agc_error	The focus agc results are out of range
0x0C	radial_timeout_error	Servo didn't get on track within the timeout
0x0D	radial_retries_error	Servo didn't get on track after several retries
0x0E	radial_agc_error	The radial agc results are out of range
0x0F	radial_init_error	Unreliable signal scaling after the radial initialisation
0x10	hf_pll_error	HF-decoder pll could not lock to HF signal
0x11	wobble_pll_error	Wobble pll could not lock to wobble signal
0x12	subcode_timeout_error	Subcode information could not be read
0x13	subcode_notfound_error	Requested subcode item could not be found
0x14	header_timeout_error	Header information could not be read
0x15	adip_timeout_error	Adip information could not be read
0x16	adip_window_error	Adip address was not within expected window
0x17	adip_sync_error	No adip sync was detected
0x18	atip_timeout_error	Atip information could not be read
0x19	atip_notfound_error	Requested atip item could not be found
0x1A	atip_window_error	Atip address was not within expected window
0x1B	atip_sync_error	No atip sync was detected
0x1C	tray_error	Tray could not be closed or opened within the timeout
0x1D	seek_error	The requested seek couldn't be performed within the timeout
0x1E	no_hf_present_error	Attempt to read from a blank area
0x1F	record_error	An error occurred during the recording
0x20	illegal_stopaddress_error	The requested stopaddress with modify-stop-address is not valid
0x21	no_disc_error	No disc is detected
0x22	not_initialised_error	The system is not initialised (e.g. seek on unknown disctype)
0x23	illegal_medium_error	BE detected an unsupported medium during disc recognition
0x24	cd_frequency_error	Measured HF frequency is not within CD frequency range
0x25	dvd_frequency_error	Measured HF frequency is not within DVD frequency range
0x26	reserved(non_existing_bca_error)	Attempt to read non-existing bca information
0x27	reserved(bca_read_error)	An error occurred during reading of bca information
0x28	selftest_error	An error occurred during the self-test of the BE
0x29	i2c_error	The I2C interface does not operate
0x2A	laser_pll_error	Laser control pll did not lock or lost lock on write clock
0x2B	laser_forward_sense_error	Forward sense value didn't change with changing laser power
0x2C	jitter_optimisation_error	An error occurred during optimisation of the jitter
0x2D	tilt_calibration_error	An error occurred during calibration of the tilt frame
0x2E	reserved	
0x2F	frontend_offset_calib_error	The offset in the frontend couldn't be calibrated
0x30	reserved	
0x31	wsg_calculation_error	An error occurred in the calculation of the write strategy
0x32	buffer_overrun_error	The buffer input stream overran the buffer output stream
0x33	return_value_invalid_error	The requested information is not available for this inquiry
0x34	illegal_recording_speed_error	The selected speed is not allowed for a recording on this medium
0x35	opc_media_parameter_error	The media parameters (info in ATIP/ADIP) are invalid or not read
0x36	opc_record_power_error	The final optimum power was not reached
0x37	opc_start_power_low_error	OPC start power too low (optimum power is higher)
0x38	opc_start_power_high_error	OPC start power too high (optimum power is lower)

error code	error	meaning
0x39	opc_power_calculation_error	Error during OPC power calculation (samples are wrong)
0x3A	opc_test_zone_full_error	OPC can't be performed because test zone is full
0x3B	opc_bad_jitter_measurement_error	The jitter measurement during OPC samples readback failed
0x3C	opc_read_samples_error	An error occurred during OPC readback sampling
0x3D	ropc_alpha_overflow_error	The determined value for the optimum power is too high
0x3E	ropc_alpha_ref_current_error	The alpha measurement reference current is wrong (IAN)
0x3F	ropc_alpha_gain_error	The alpha measurement alpha gain is wrong
0x40	beta_over_under_flow_error	During the walking OPC a beta over-/under-flow was detected
0x41	not_enough_calib_points_error	Not enough valid calibration points available for re-calibration
0x42	not_enough_power_error	The calculated power during re-calibration exceeds max power
0x43	illegal_reading_speed_error	The selected speed is not allowed for the requested command
0x44	servo_fatal_error	The actuator dissipation became too high during a servo recovery

This error is overwritten by the next player / inquiry command.

Byte 1 - 9: cumulative errors of previous error occurences.
Every individual error has its own bit in the 9-byte structure as described in the drawing below:

Format of the BE error bytes.

byte 1

b7	b6	b5	b4	b3	b2	b1	b0
reserved	FOCUS AGC ERROR	FOCUS RETRIES ERROR	FOCUS TIMEOUT ERROR	RADIAL AGC ERROR	RADIAL RETRIES ERROR	RADIAL TIMEOUT ERROR	RADIAL INIT ERROR

byte 2

TRAY ERROR	reserved	JITTER OPTIMIZATION ERROR	SLEDGE HOME ERROR	SLEDGE UNSTABLE ERROR	SLEDGE CALIBRATION ERROR	TILT SENSOR OFFSET CALIBRATION ERROR	TILT CALIBRATION ERROR

byte 3

RECORD ERROR	SEEK ERROR	NO DISC ERROR	NOT INITIALISED ERROR	ILLEGAL STOPADDRESS ERROR	ILLEGAL PARAMETER ERROR	ILLEGAL COMMAND ERROR	COMMAND TIMEOUT ERROR

byte 4

SERVO FATAL ERROR	reserved	reserved	HF PLL ERROR	NO HF PRESENT ERROR	HEADER TIMEOUT ERROR	SUBCODE NOTFOUND ERROR	SUBCODE TIMEOUT ERROR

byte5

WOBBLE PLL ERROR	ADIP SYNC ERROR	ADIP WINDOW ERROR	ADIP TIMEOUT ERROR	ATIP NOTFOUND ERROR	ATIP SYNC ERROR	ATIP WINDOW ERROR	ATIP TIMEOUT ERROR

byte6

WSG CALCULATION ERROR	DVD FREQUENCY ERROR	CD FREQUENCY ERROR	ILLEGAL RECORDING SPEED ERROR	SPEED WINDOW ERROR	SPEED TIMEOUT ERROR	NON EXISTING BCA ERROR	BCA READ ERROR

byte7

LASER FORWARD SENSE ERROR	NVRAM CHECKSUM UPDATE ERROR	FRONTEND OFFSET CALIBRATION ERROR	LASER PLL ERROR	ILLEGAL READING SPEED ERROR	ILLEGAL MEDIUM ERROR	SELFTEST ERROR	I^2C ERROR

byte8

OPC READ SAMPLES ERROR	OPC BAD JITTER MEASUREMENT ERROR	OPC TEST ZONE FULL ERROR	OPC POWER CALCULATION ERROR	OPC START POWER HIGH ERROR	OPC START POWER LOW ERROR	OPC RECORD POWER ERROR	OPC MEDIA PARAMETER ERROR

byte9

RETURN VALUE INVALID ERROR	BUFFER OVERRUN ERROR	BETA OVER/UNDER FLOW ERROR	NOT ENOUGH CALIB POINTS ERROR	NOT ENOUGH POWER ERROR	ROPC ALPHA GAIN ERROR	ROPC ALPHA REF CURRENT ERROR	ROPC ALPHA OVERFLOW ERROR

These errors are kept in memory until a power down of the drive (e.g. when recorder goes to standby) or reset of the drive.

5.3.2 Cumulative errors

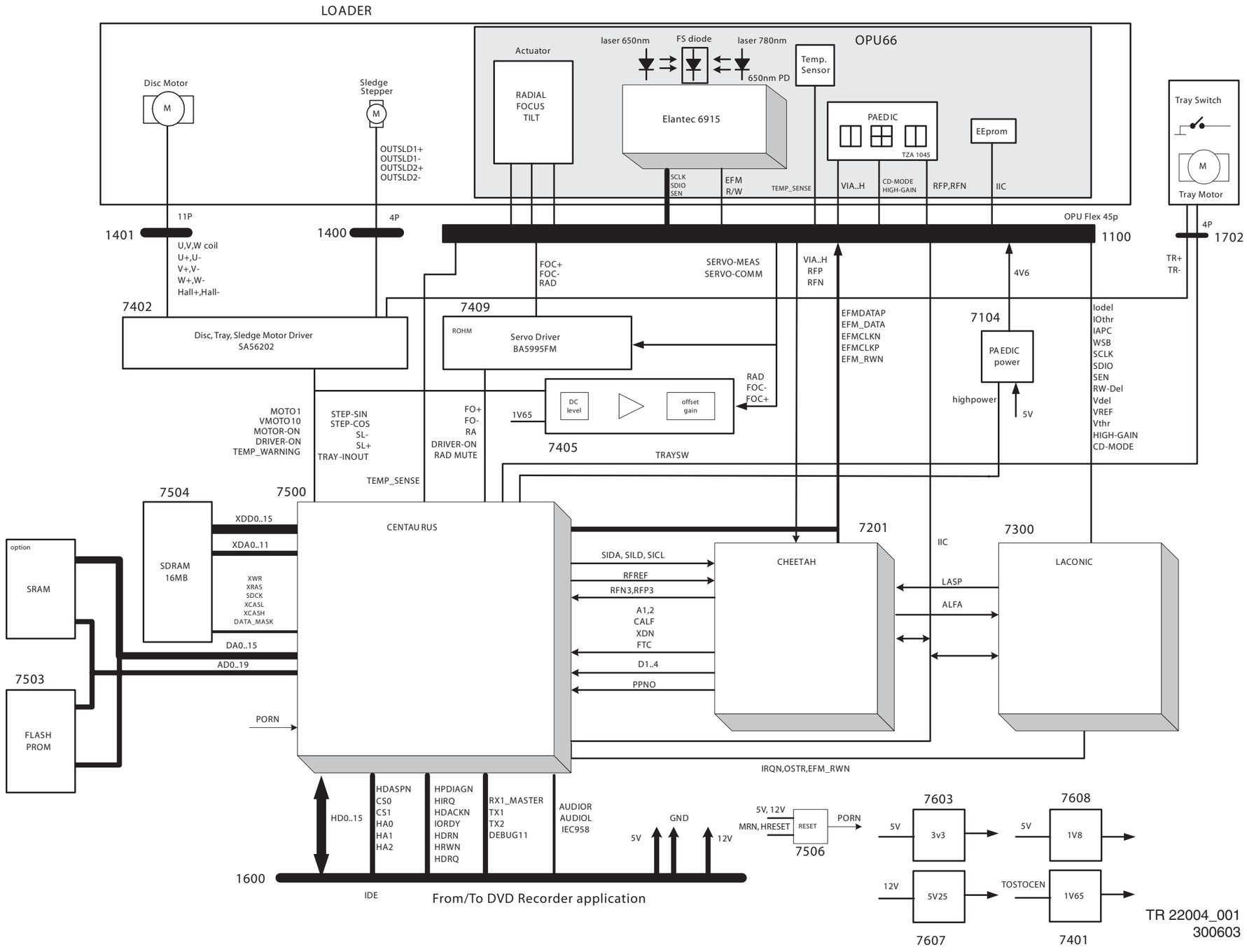
These errors are stored in EEPROM and are thus non-volatile showing the complete error history of the drive.
Byte 1 - 9: cumulative errors of previous player / inquiry error occurences. These bytes are the same as the nine bytes (1-9) of the Momentary errors

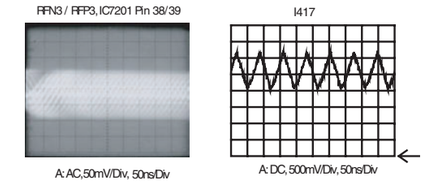
5.3.3 Software fatal assert

Gives row number and file name in the source code of the firmware of the data path of the AV3

6. Block Diagrams, Waveforms, Wiring Diagram.

Block Diagram

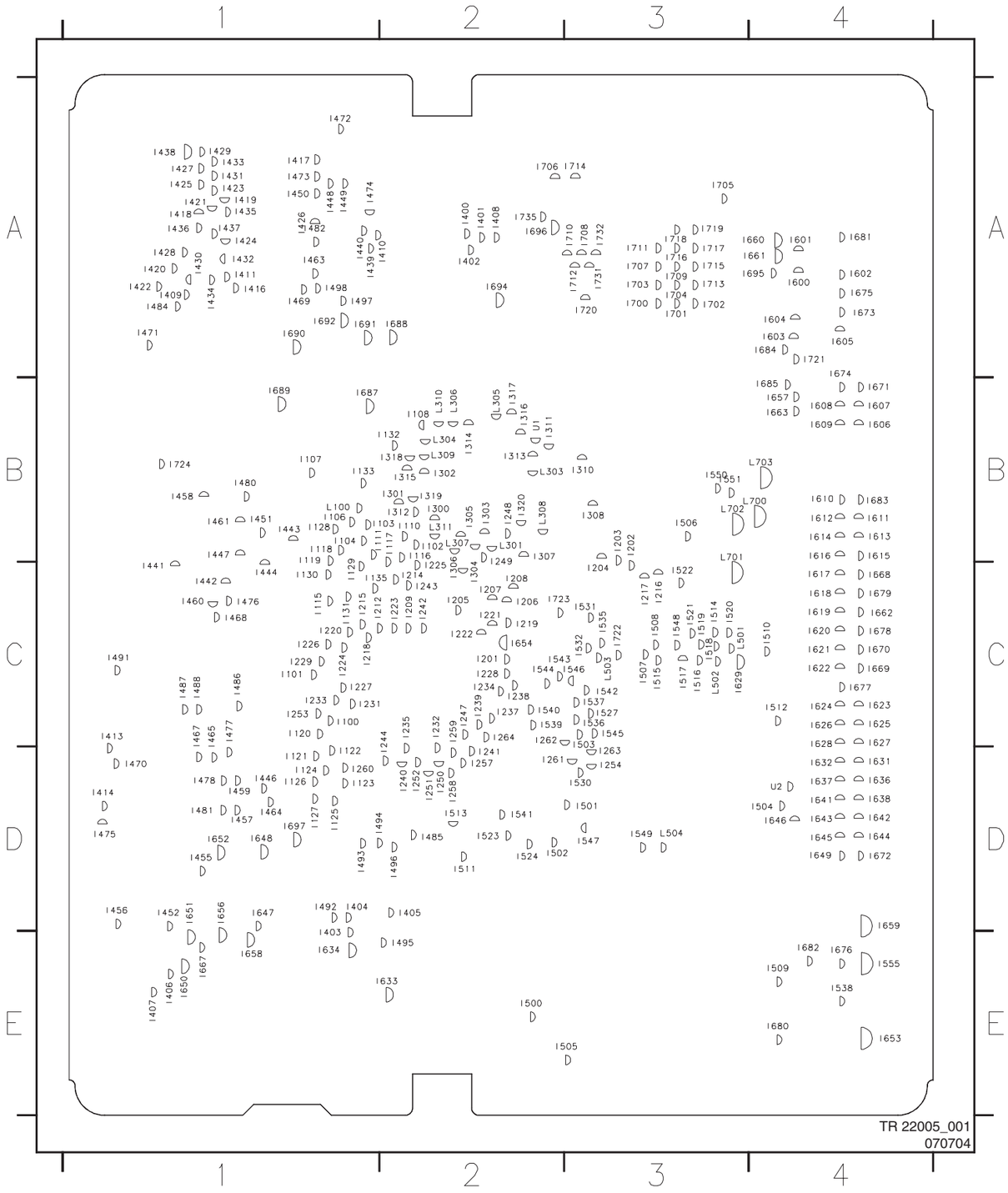




Testpoints Overview

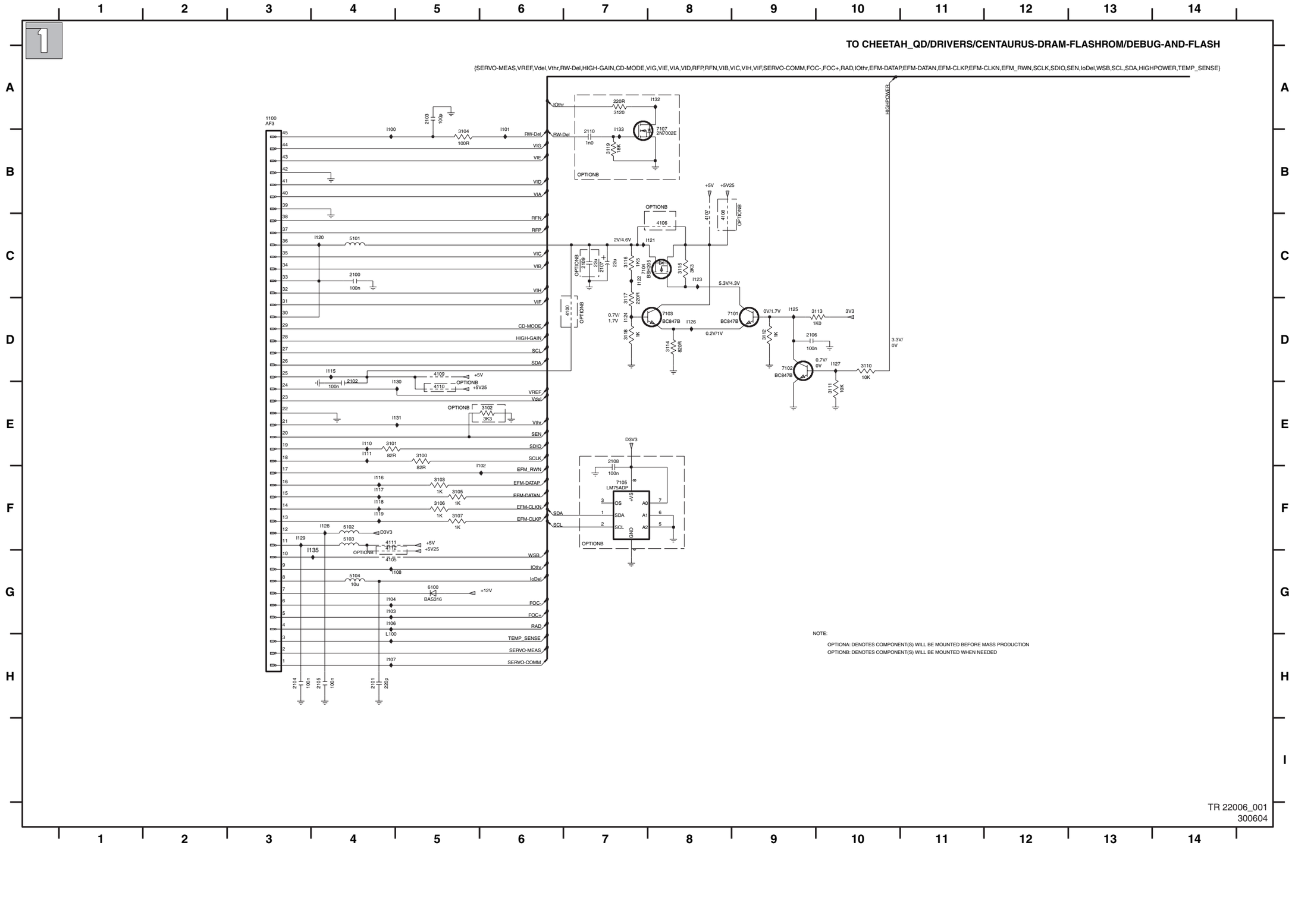
U1 B2	I101 C1	I106 B1	I110 B2	I117 B2	I120 C1	I124 D1	I127 D1	I131 C1	I135 C1
U1 B2	I102 B2	I106 B1	I111 B1	I117 B2	I121 C1	I124 D1	I128 B1	I131 C1	I201 C2
U2 D4	I102 B2	I107 B1	I111 B1	I118 B2	I121 D1	I125 D1	I128 B1	I132 B2	I201 C2
U2 D4	I103 B1	I107 B1	I115 C1	I118 B1	I122 C1	I125 D1	I129 B1	I132 B2	I202 B3
I100 C1	I103 B1	I108 B2	I115 C1	I119 B1	I122 D1	I126 D1	I129 C1	I133 B1	I202 C3
I100 C1	I104 B1	I108 B2	I116 B2	I119 B1	I123 D1	I126 D1	I130 B1	I133 B1	I203 B3
I101 C1	I104 B1	I110 B2	I116 B2	I120 C1	I123 D1	I127 D1	I130 C1	I135 C1	I203 B3
									I204 B3
									I204 B3
									I205 C2
									I205 C2
									I206 C2
									I206 C2
									I207 C2
									I207 C2
									I208 C2
									I208 C2
									I209 C2
									I209 C2
									I212 C1
									I212 C1
									I214 C2
									I214 C2
									I215 C1
									I215 C1
									I216 C3
									I216 C3
									I217 C3
									I217 C3
									I218 C1
									I218 C1
									I219 C2
									I219 C2
									I220 C1
									I220 C1
									I221 C2
									I221 C2
									I222 C2
									I222 C2
									I223 C2
									I223 C2
									I224 C1
									I224 C1
									I225 B2
									I225 C2
									I226 C1
									I226 C1
									I227 C1
									I227 C1
									I228 C2
									I228 C2
									I229 C1
									I229 C1
									I231 C1
									I231 C1
									I232 C2
									I233 C1
									I233 C1
									I234 C2
									I234 C2
									I235 C2
									I235 D2
									I237 C2
									I237 C2
									I238 C2
									I238 C2
									I239 C2
									I239 C2
									I240 D2
									I240 D2
									I241 C2
									I241 D2
									I242 C2
									I242 C2
									I243 C2
									I243 C2
									I244 D2
									I244 D2
									I247 C2
									I247 C2
									I248 B2
									I248 B2
									I249 B2
									I249 B2
									I250 D2
									I250 D2
									I251 D2
									I251 D2
									I252 D2
									I252 D2
									I253 C1
									I253 C1
									I254 D3
									I254 D3
									I257 D2
									I257 D2

I258 D2	I424 A1	I480 B1	I540 C2	I642 D4	I697 D1				
I258 D2	I425 A1	I480 B1	I541 D2	I643 D4	I700 A3				
I259 C2	I425 A1	I481 D1	I541 D2	I643 D4	I700 A3				
I259 D2	I426 A1	I481 D1	I542 C3	I644 D4	I701 A3				
I260 D1	I426 A1	I482 A1	I542 C3	I644 D4	I701 A3				
I260 D1	I427 A1	I482 A1	I543 C2	I645 D4	I702 A3				
I261 D3	I427 A1	I484 A1	I543 C2	I645 D4	I702 A3				
I261 D3	I428 A1	I484 A1	I544 C2	I646 D4	I703 A3				
I262 C3	I428 A1	I485 D2	I544 C2	I646 D4	I703 A3				
I262 C3	I429 A1	I485 D2	I545 C3	I647 D1	I704 A3				
I263 D3	I429 A1	I486 C1	I545 C3	I647 D1	I704 A3				
I263 D3	I430 A1	I486 C1	I546 C3	I648 D1	I705 A3				
I264 C2	I430 A1	I487 C1	I546 C3	I648 D1	I705 A3				
I264 C2	I431 A1	I487 C1	I547 D3	I649 D4	I706 A2				
I300 B2	I431 A1	I488 C1	I548 C3	I649 D4	I706 A2				
I300 B2	I432 A1	I488 C1	I549 D3	I650 E1	I707 A3				
I301 B2	I432 A1	I491 C1	I550 B3	I650 E1	I707 A3				
I301 B2	I433 A1	I491 C1	I551 B3	I651 D1	I708 A3				
I302 B2	I433 A1	I492 D1	I555 E4	I651 E1	I708 A3				
I302 B2	I434 A1	I492 D1	I600 A4	I652 D1	I709 A3				
I303 B2	I434 A1	I493 D1	I600 A4	I652 D1	I709 A3				
I303 B2	I435 A1	I493 D1	I601 A4	I653 E4	I710 A2				
I304 C2	I435 A1	I494 D1	I601 A4	I653 E4	I710 A3				
I304 C2	I436 A1	I494 D1	I602 A4	I654 C2	I711 A3				
I305 B2	I436 A1	I495 D2	I602 A4	I654 C2	I711 A3				
I305 B2	I437 A1	I495 E2	I603 A4	I655 E4	I712 A2				
I306 B2	I437 A1	I496 D2	I603 A4	I656 D1	I712 A3				
I306 B2	I438 A1	I496 D2	I604 A4	I656 E1	I713 A3				
I307 B2	I438 A1	I497 A1	I604 A4	I657 B4	I713 A3				
I308 B3	I439 A1	I498 A1	I605 A4	I657 B4	I714 A2				
I308 B3	I439 A1	I500 E2	I605 A4	I658 D1	I714 A3				
I310 B3	I440 A1	I500 E2	I606 B4	I658 E1	I715 A3				
I310 B3	I440 A1	I501 D3	I606 B4	I659 D4	I715 A3				
I311 B2	I441 C1	I501 D3	I607 B4	I659 D4	I716 A3				
I311 B2	I441 C1	I502 D2	I607 B4	I660 A4	I716 A3				
I312 B2	I442 C1	I502 D2	I608 B4	I660 A4	I717 A3				
I313 B2	I442 C1	I503 C3	I608 B4	I661 A4	I717 A3				
I313 B2	I443 B1	I503 C3	I609 B4	I661 A4	I718 A3				
I314 B2	I443 B1	I504 D4	I609 B4	I662 C4	I718 A3				
I315 B2	I444 C1	I504 D4	I610 B4	I662 C4	I719 A3				
I315 B2	I444 C1	I505 E3	I610 B4	I663 B4	I719 A3				
I316 B2	I446 D1	I506 B3	I611 B4	I663 B4	I720 A3				
I316 B2	I446 D1	I506 B3	I611 B4	I667 E1	I720 A3				
I316 B2	I447 B1	I507 C3	I612 B4	I667 E1	I721 A4				
I317 B2	I447 B1	I507 C3	I612 B4	I668 B4	I721 A4				
I317 B2	I448 A1	I508 C3	I613 B4	I668 C4	I722 C3				
I318 B2	I449 A1	I508 C3	I613 B4	I669 C4	I722 C3				
I318 B2	I450 A1	I509 E4	I614 B4	I669 C4	I723 C2				
I319 B2	I451 B1	I509 E4	I614 B4	I670 C4	I723 C2				
I319 B2	I451 B1	I510 C4	I615 B4	I670 C4	I724 B1				
I320 B2	I452 D1	I510 C4	I615 B4	I671 A4	I731 A3				
I320 B2	I455 D1	I511 D2	I616 B4	I671 B4	I731 A3				
I321 B2	I455 D1	I511 E3	I616 B4	I672 D4	I732 A3				
I400 A2	I455 D1	I512 C4	I617 C4	I672 D4	I732 A3				
I400 A2	I456 D1	I512 C4	I617 C4	I673 A4	I735 A2				
I401 A2	I456 D1	I513 D2	I618 C4	I673 A4	I735 A2				
I401 A2	I457 D1	I513 D2	I618 C4	I674 A4	L100 B1				
I402 A2	I457 D1	I514 C3	I619 C4	I674 B4	L100 B1				
I402 A2	I458 B1	I514 C3	I619 C4	I675 A4	L301 B2				
I403 D1	I458 B1	I515 C3	I620 C4	I675 A4	L301 B2				
I403 E1	I459 D1	I515 C3	I620 C4	I676 E4	L303 B2				
I404 D1	I459 D1	I516 C3	I621 C4	I676 E4	L303 B2				
I404 D1	I460 C1	I516 C3	I621 C4	I677 C4	L304 B2				
I405 D2	I460 C1	I517 C3	I622 C4	I677 C4	L304 B2				
I405 D2	I461 B1	I517 C3	I622 C4	I678 C4	L305 B2				
I406 E1	I461 B1	I518 C3	I623 C4	I678 C4	L305 B2				
I406 E1	I463 A1	I518 C3	I623 C4	I679 C4	L306 B2				
I407 E1	I463 A1	I519 C3	I624 C4	I679 C4	L306 B2				
I407 E1	I464 D1	I519 C3	I624 C4	I680 E4	L307 B2				
I408 A2	I464 D1	I520 C3	I625 C4	I680 E4	L307 B2				
I408 A2	I465 C1	I520 C3	I625 C4	I681 A4	L308 B2				
I409 A1	I465 D1	I521 C3	I626 C4	I681 A4	L308 B2				
I410 A1	I467 C1	I521 C3	I626 C4	I682 E4	L309 B2				
I410 A1	I467 D1	I522 C3	I627 C4	I682 E4	L309 B2				
I411 A1	I468 C1	I522 C3	I627 C4	I683 B4	L310 B2				
I413 C1	I468 C1	I523 D2	I628 C4	I683 B4	L310 B2				
I413 D1	I469 A1	I524 D2	I628 C4	I684 A4	L311 B2				
I414 D1	I469 A1	I527 C3	I629 C3	I684 A4	L311 B2				
I414 D1	I470 D1	I527 C3	I629 C3	I685 A4	L501 C3				
I416 A1	I470 D1	I530 D3	I631 D4	I685 B4	L501 C3				
I416 A1	I471 A1	I530 D3	I631 D4	I687 B1	L502 C3				
I417 A1	I471 A1	I531 C3	I632 D4	I687 B1	L502 C3				
I417 A1	I472 A1	I531 C3	I632 D4	I688 A2	L503 C3				
I418 A1	I472 A1	I532 C3	I633 E2	I688 A2	L503 C3				
I418 A1	I473 A1	I532 C3	I633 E2	I689 B1	L504 D3				
I419 A1	I473 A1	I535 C3	I634 E1	I689 B1	L504 D3				
I419 A1	I474 A1	I535 C3	I634 E1	I690 A1	L700 B4				
I420 A1	I474 A2	I536 C3	I636 D4	I690 A1	L700 B4				
I420 A1	I475 D1	I536 C3	I636 D4	I691 A1	L701 B3				
I421 A1	I475 D1	I537 C3	I637 D4	I691 A1	L701 C3				
I421 A1	I476 C1	I537 C3	I637 D4	I692 A1	L702 B3				
I422 A1	I476 C1	I538 E4	I638 D4	I692 A1	L702 B3				
I422 A1	I477 C1	I538 E4	I638 D4	I694 A2	L703 B4				
I423 A1	I477 D1	I539 C2	I641 D4	I695 A4					
I423 A1	I478 D1	I539 C2	I641 D4	I695 A4					
I424 A1	I478 D1	I540 C2	I642 D4	I696 A2					



7. Electrical Diagrams and Print-Layouts

Servo Board: OPU Interface



1100 A3
2100 C4
2101 H4
2102 E4
2103 A5
2104 H3
2105 H4
2106 D9
2107 C7
2108 E7
2109 C7
2110 B7
3100 E5
3101 E4
3102 E6
3103 F5
3104 B5
3105 F5
3106 F5
3107 F5
3110 D10
3111 E10
3112 D9
3113 D10
3114 D8
3115 C8
3116 C7
3117 D7
3118 D7
3119 B7
3120 A7
4100 D7
4105 G4
4106 C8
4107 C8
4108 C8
4109 D5
4110 E5
4111 F4
4112 G4
5101 C4
5102 F4
5103 F4
5104 G4
6100 G5
7101 D9
7102 D9
7103 D8
7104 C7
7105 F7
7107 B8
I100 A4
I101 A6
I102 E6
I103 G4
I104 G4
I106 G4
I107 H4
I108 G5
I110 E4
I111 E4
I115 D4
I116 F4
I117 F4
I118 F4
I119 F4
I120 C4
I121 C8
I122 C7
I123 C8
I124 D7
I125 D9
I126 D8
I127 D10
I128 F4
I129 F3
I130 D5
I131 E5
I132 A8
I133 A7
I135 F4
L100 G4

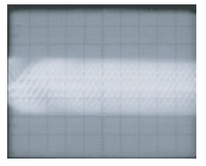
Servo Board: Cheetah

{TIMOUT,RFP,RFN,VIA,VIB,VIC,VID,VIE,VIF,VIG,VIH,EFM-CLKP,EFM-CLKN,EFM-DATAP,EFM-DATAN,LASP,PPNO,RFP3,RFN3,RFREF,CALF,A1,A2,S2-XDN,D1_TILTN,D2_TLN,D3_REN,D4_FEN,S1_MIRN,MON1,MON2,SIDA,SICL,SILD,SDA,SCL,ALFA,FTC,RW-Del,EFM_RWN,RFP5,RFN5}

TO OPU/EPLD-LADIC-CON/LACONIC_IC/CENTAURUS

TZA1047
CHEETAH2

RFN3 / RFP3, IC7201 Pin 38/39



A:AC, 50mV/Div
50ns/Div

NOTE:
OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION
OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22007_001
300604

2204 A4
2205 A5
2209 B2
2210 B2
2211 B3
2212 B3
2213 E7
2214 E7
2215 E7
2217 E7
2218 E7
2219 B3
2221 C4
2223 F7
2228 D7
2229 G8
2230 G9
2231 H10
2232 I8
2233 I9
2234 I10
3200 B5
3201 A4
3202 B4
3204 C4
3206 E7
3207 G4
3208 G5
3209 G2
3210 H2
3211 H2
3212 H2
3213 F7
3215 C3
3216 C3
3217 F7
3218 G7
3219 I7
3220 G8
3221 G9
3222 G8
3223 H9
3224 G9
3225 I8
3226 H9
3227 I8
3228 I9
3229 I9
4200 H11
4201 H11
4202 C5
4203 C4
4204 C5
5202 B2
7201 C4
7202 G9
7203 I9
I201 B2
I202 C6
I203 C6
I204 C5
I205 C5
I206 C5
I207 C5
I208 C5
I209 C4
I212 C4
I214 C4
I215 D3
I216 C7
I217 D7
I218 D3
I219 D7
I220 D3
I221 D7
I222 D7
I223 C4
I224 D3
I225 C5
I226 D3
I227 E3
I228 E7
I229 E3
I231 E3
I232 F5
I233 E3
I234 E7
I235 F4
I237 E7
I238 F7
I239 E7
I240 G3
I241 F7
I242 B5
I243 B4
I244 F4
I247 E7
I248 F3
I249 F3
I250 G5
I251 G5
I252 G5
I253 F4
I254 G2
I257 G6
I258 G6
I259 I6
I260 I6
I261 H2
I262 H2
I263 H2
I264 E8

Servo Board: Laconic

TO OPU/EPLD/CENTAURUS

{WSB,RW-Del,OSC_IN,PORN,SCL,SDA,SCLK,SDIO,SEN,HIGH-GAIN,CD-MODE,ALFA,LASP,Vdel,Vthr,VREF,IOthr,CD-MODE,HIGH-GAIN,IRQN,OSTR,SDA,SCL,IoDel}

D3V3 — 5300 — I303 — 3V3D
2301 100n, 2302 100n, 2300 100n

A3V3 — 5301 — I313 — 3V3A
2306 100n, 2307 100n

OSC_IN — I307 — 2311 1n0 — 3303 150R — 2312 15p

2303 15p, 2304 15p, 1302 CX-16F 16M93, 3300 1M OPTIONB

I308 — 3315 33R — I310

3316 10K — 3V3D

3302 1R

OPTIONB 2308 100n Temp Val

L308, L303, I311, I320, I308, I310, ALFA, LASP, U1

3V3D, 3V3A

L301, L307, I304, I305, I306, I311

7300 LACONIC TZA1042HL

1	AEZ	44	SCL
2	Vddd3	43	SDA
3	Vssd3	42	Test2d
4	ClkOut	41	Bank
5	Osco	40	Vddd2
6	Osci	39	Vssd2
7	Test1d	38	RWn
8	Ameas	37	Resetn
9	Vdda1	36	OSTR
10	Vssa1	35	IRQn
11	LasP	34	WSB
12	VRefL	33	SCLK
13	VRefH	32	SDIO
14	VDel	31	SEN
15	VThr	30	Busy
16	Vopuref	29	Vddd1
17	Vrefin	28	Vssd1
18	Vdda2	27	HiLo
19	Vssa2	26	DvdCd
20	Test1a	25	EnR1
21	IoDel	24	EnR2
22	IoThr	23	Test2a

I300 SCLK, I312 SDIO, I301 SEN, I319, 3V3D, I302 HIGH-GAIN, I315 CD-MODE, I318

L309, L304

OPTIONB 2309 100n — 3301 10K — 3V3D

0V, 1.2V — I316, I317, L305 — 2305 22n

I314, L306, L310

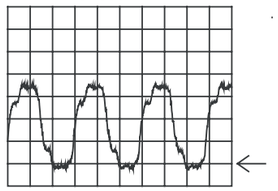
4303 OPTIONB — 3308 10K — 3V3A

3309 1K8, 2310 100n

Vdel, Vthr, VREF, IoDel, IOthr

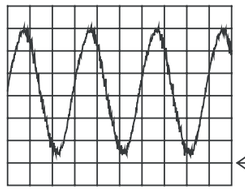
OPTIONB — 3304 10K, 3305 10K, 3306 10K — 3V3D

IC7300 Pin 4



A: DC, 1 V/Div, 20ns/Div

IC7300 Pin 5



A: DC, 500mV/Div, 20ns/Div

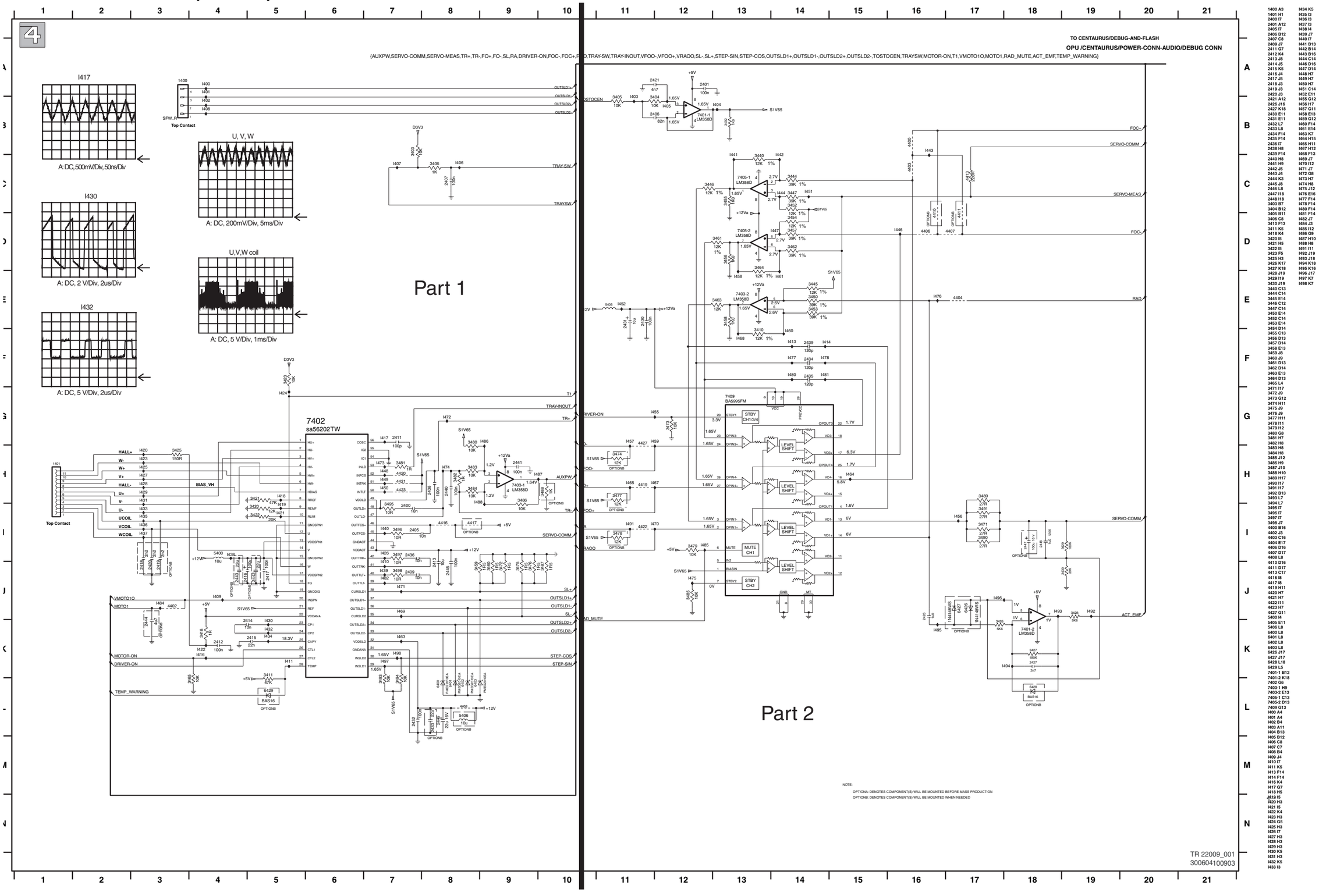
NOTE:

OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION
OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22008_001
300604

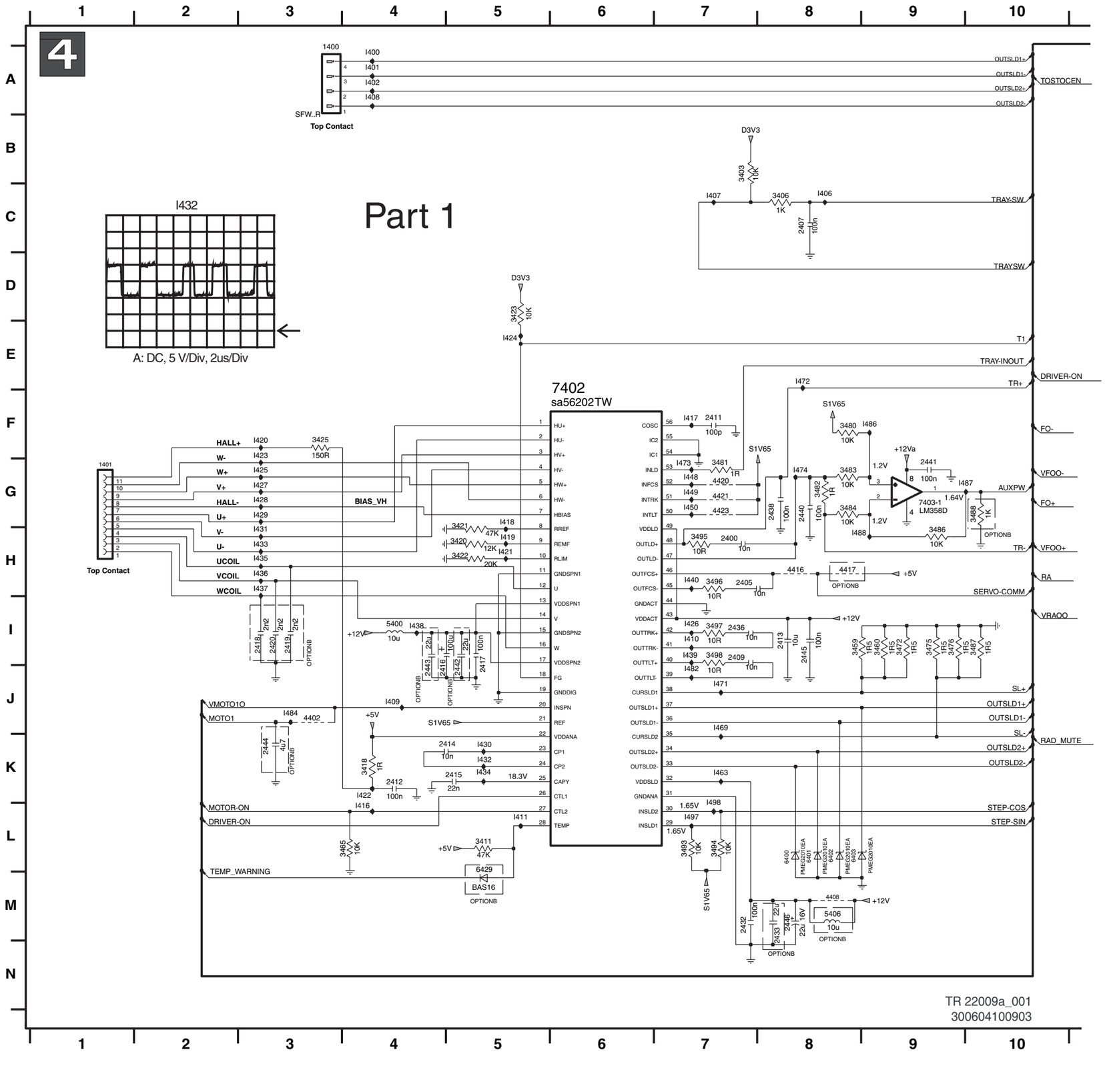
U1 E2
1302 D1
2300 B2
2301 B2
2302 B2
2303 D1
2304 D1
2305 F3
2306 B2
2307 B2
2308 B5
2309 E6
2310 F4
2311 C1
2312 C2
3300 D2
3301 E6
3302 B4
3303 C2
3304 E5
3305 E5
3306 E6
3308 F4
3309 F4
3315 D2
3316 B5
4303 F4
5300 A2
5301 B2
7300 D4
I300 C5
I301 D5
I302 D5
I303 A2
I304 C4
I305 C4
I306 C4
I307 C1
I308 D2
I310 D2
I311 D3
I312 C5
I313 B2
I314 E4
I315 D5
I316 E3
I317 E3
I318 D5
I319 D5
I320 D2
L301 C3
L303 D3
L304 E5
L305 E3
L306 E4
L307 C4
L308 C3
L309 E5
L310 E4
L311 C5

Servo Board: Drivers (Overview)



1400 A3 I434 K5
1401 H1 I435 I3
2400 I7 I436 I3
2401 A12 I437 I3
2405 I7 I438 I4
2406 B12 I439 J7
2407 C8 I440 I7
2409 J7 I441 B13
2411 G7 I442 B14
2412 K4 I443 B15
2413 J8 I444 C14
2414 J5 I446 D16
2415 K5 I447 D14
2416 J4 I448 H7
2417 J5 I449 H7
2418 J3 I450 H7
2419 J3 I451 C14
2420 J3 I452 E11
2421 A12 I455 G12
2426 J16 I456 I17
2427 K18 I457 Q11
2430 E11 I458 E13
2431 E11 I459 G12
2432 L7 I460 F14
2433 L8 I461 E14
2434 F14 I463 K7
2435 F14 I464 H15
2436 I7 I465 H11
2438 H8 I467 H12
2439 F14 I468 F13
2440 H8 I469 J7
2441 H9 I470 I12
2442 J5 I471 J7
2443 J4 I472 G8
2444 K3 I473 H7
2445 J8 I474 H8
2446 L8 I475 J12
2447 I18 I476 E16
2448 I18 I477 F14
3403 B7 I478 F14
3404 B12 I480 F14
3405 B11 I481 F14
3406 C8 I482 J7
3410 F13 I484 J3
3411 K5 I485 I12
3418 K4 I486 G9
3420 I5 I487 H10
3421 H5 I488 H8
3422 I5 I491 I11
3423 F5 I492 J19
3425 H3 I493 J18
3426 K17 I494 K18
3427 K18 I495 K16
3428 J19 I496 J17
3429 I19 I497 K7
3430 J19 I498 K7
3440 C13
3444 C14
3445 E14
3446 C12
3447 C14
3450 E14
3452 C14
3453 E14
3454 D14
3455 C13
3456 D13
3457 D14
3458 E13
3459 J8
3460 J9
3461 D13
3462 D14
3463 E13
3464 D13
3465 L4
3471 I17
3472 J9
3473 G12
3474 H11
3475 J9
3476 J9
3477 H11
3478 I11
3479 I12
3480 G8
3481 H7
3482 H8
3483 H8
3484 H8
3485 J12
3486 H9
3487 J10
3488 H10
3489 H17
3490 I17
3491 I17
3492 B13
3493 L7
3494 L7
3495 I7
3496 I7
3497 I7
3498 J7
4400 B16
4402 J3
4403 C16
4404 E17
4406 D16
4407 D17
4408 L8
4410 D16
4411 D17
4413 C17
4416 I8
4417 I8
4419 H11
4420 H7
4421 H7
4422 I11
4423 H7
4427 G11
5400 I4
5405 E11
5406 L8
6400 L8
6401 L8
6402 L8
6403 L8
6426 J17
6427 J17
6428 L18
6429 L5
7401-1 B12
7401-2 K18
7402 G6
7403-1 H9
7403-2 E13
7405-1 C13
7405-2 D13
7409 G13
I400 A4
I401 A4
I402 B4
I403 A11
I404 B13
I405 B12
I406 C8
I407 C7
I408 B4
I409 J4
I410 I7
I411 K5
I413 F14
I414 F14
I416 K4
I417 G7
I418 H5
I419 I5
I420 H3
I421 I5
I422 K4
I423 H3
I424 G5
I425 H3
I426 I7
I427 H3
I428 H3
I429 H3
I430 K5
I431 H3
I432 K5
I433 I3

Servo Board: Drivers (Left page)



Servo Board: Drivers (Right page)

TO CENTAURUS/DEBUG-AND-FLASH
OPU /CENTAURUS/POWER-CONN-AUDIO/DEBUG CONN

Part 2

I417 — A: DC, 500mV/Div, 50ns/Div
U, V, W — A: DC, 200mV/Div, 5ms/Div
I430 — A: DC, 2 V/Div, 2us/Div
U,V,W coil — A: DC, 5 V/Div, 1ms/Div

NOTE:
OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION
OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22009b_001
300604

Servo Board: Centaurus (Overview)

Part 1
TR 22010a_001

Part 2
TR 22010b_001

Part 3
TR 22010c_001

Part 4
TR 22010d_001

CENTAURUS 1.5

POWER-CONN-AUDIO/DEBUG AND FLASH/DRIVERS/CHEETAH_QD

PREPARED FOR 16MBit

PREPARED FOR 256MBit (MAX)

SDRAM

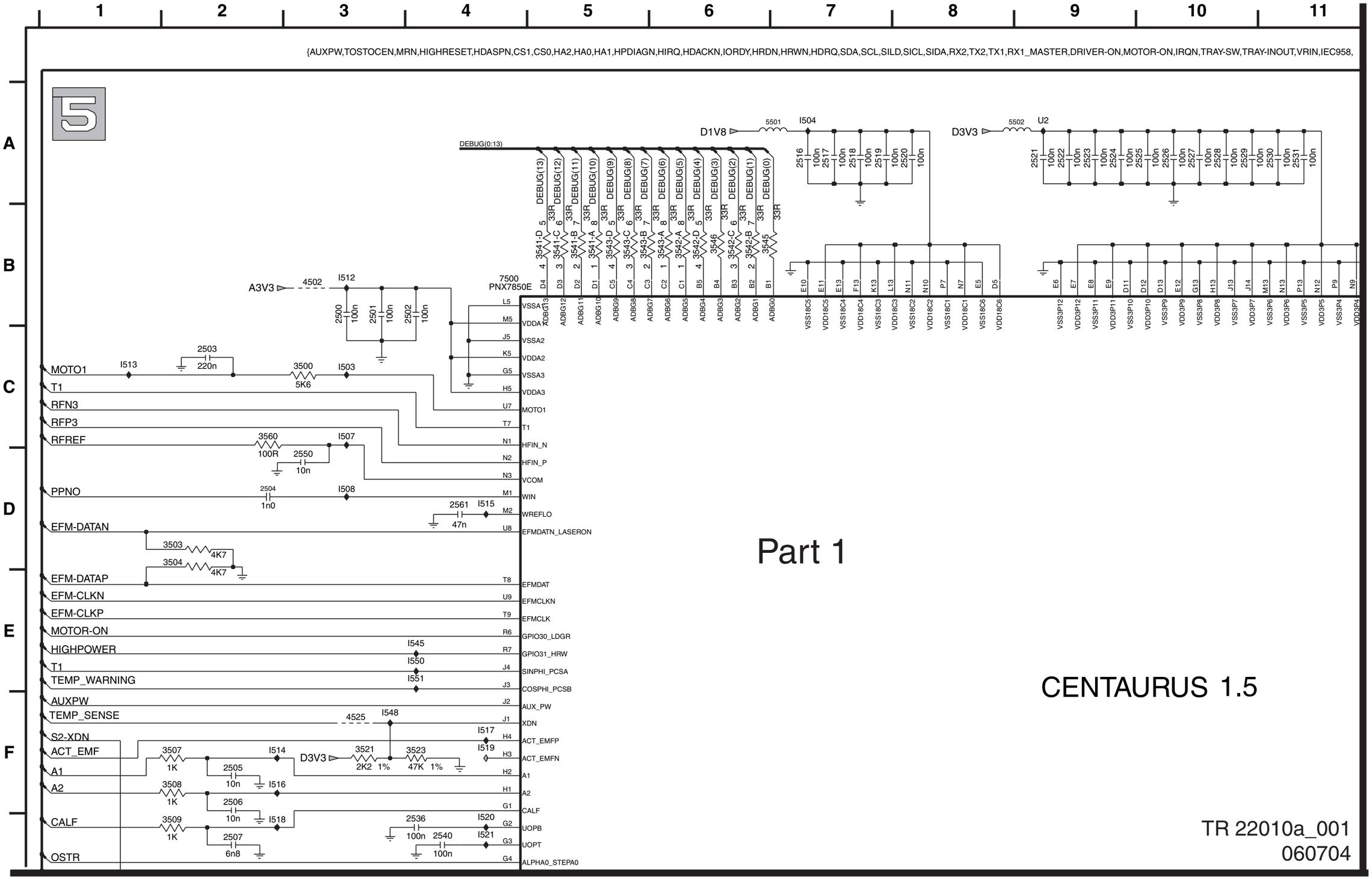
SRAM 16MB

NOTE:
OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION
OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22010_001
060704

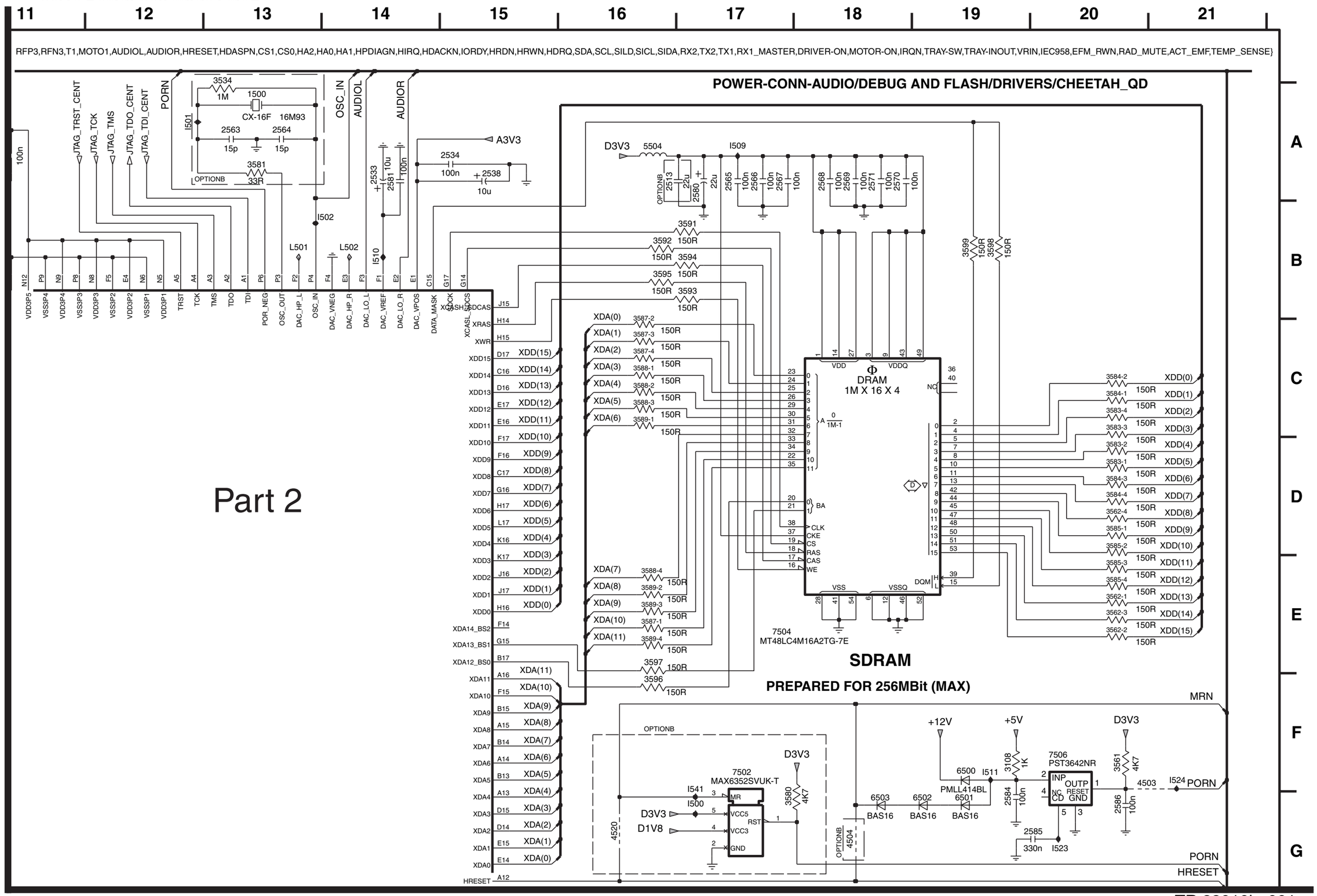
Partlist ver: 4.2

Servo Board: Centaurus Part1



Servo Board: Centaurus Part 2

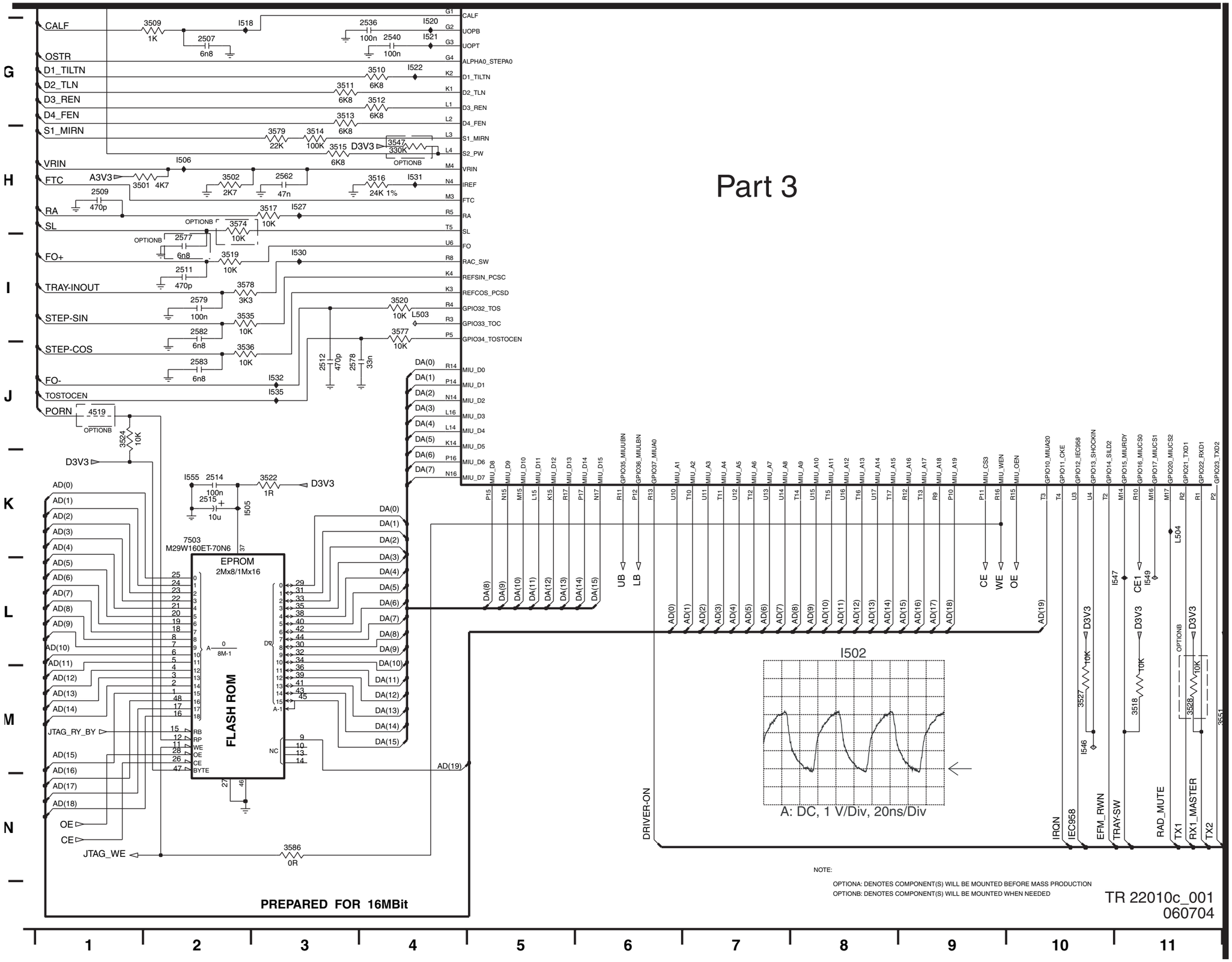
Part 2



TR 22010b_001
060704

Servo Board: Centaurus Part 3

Part 3



NOTE:

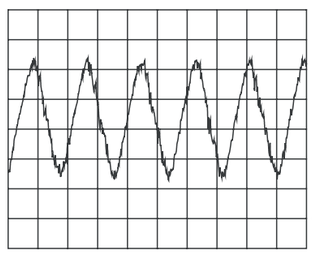
OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION
OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22010c_001
060704

Servo Board: Centaurus Part 4

Part 4

IC7504 Pin 38

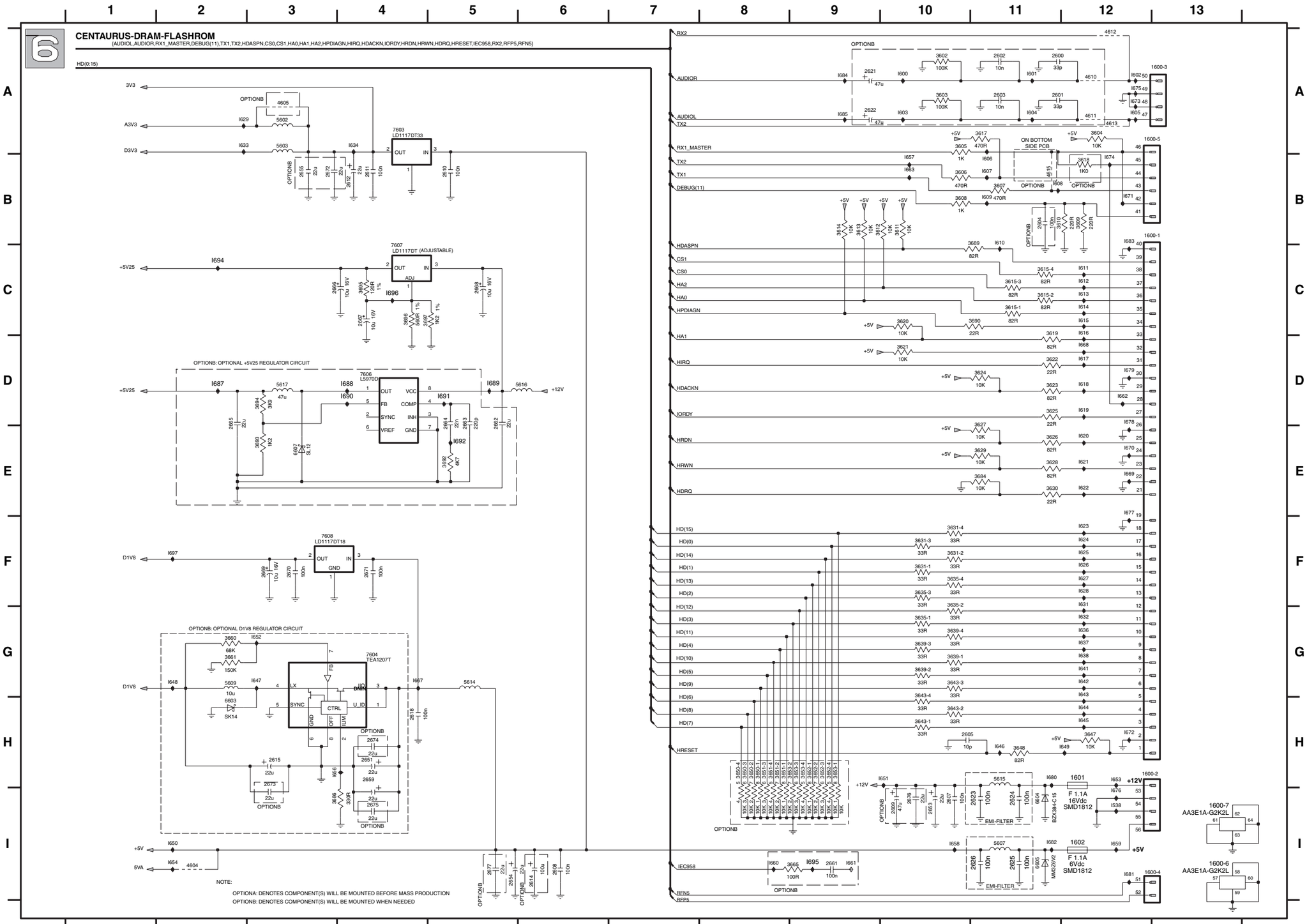


A: DC, 500mV/Div, 5ns/Div

SRAM 16MB

TR 22010d_001
060704

Servo Board: Power, Connectors



1600-1 B12	3661 G2	I690 D4
1600-2 H12	3665 I9	I691 D5
1600-3 A12	3684 E11	I692 E5
1600-4 I12	3686 I3	I694 C2
1600-5 A12	3689 C11	I695 I9
1600-6 I13	3690 C11	I696 C4
1600-7 I13	3692 E5	I697 F2
1601 H12	3693 E3	
1602 I12	3694 D3	
2600 A11	3695 C4	
2601 A11	3696 C4	
2602 A11	3697 C4	
2603 A11	4604 I2	
2604 B11	4605 A3	
2605 H10	4610 A12	
2607 I10	4611 A12	
2608 I6	4612 A12	
2609 I10	4613 A12	
2610 B5	4615 B11	
2611 B4	5602 A3	
2612 B4	5603 A3	
2614 I6	5607 I11	
2615 H3	5609 G2	
2618 H4	5614 G5	
2621 A9	5615 H11	
2622 A9	5616 D6	
2623 I11	5617 D3	
2624 I11	6603 H2	
2625 I11	6604 I11	
2626 I11	6605 I11	
2651 H4	6607 E3	
2653 I10	7603 A4	
2654 I5	7604 G4	
2655 B3	7606 D4	
2659 H4	7607 C4	
2661 I9	7608 F3	
2662 D5	I538 I12	
2663 D5	I600 A10	
2664 D5	I601 A11	
2665 D2	I602 A12	
2666 C2	I603 A10	
2667 C4	I604 A11	
2668 C5	I605 A12	
2669 F3	I606 B11	
2670 F3	I607 B11	
2671 F4	I608 B11	
2672 B3	I609 B11	
2673 H3	I610 B11	
2674 H4	I611 C12	
2675 I4	I612 C12	
2676 I10	I613 C12	
2677 I5	I614 C12	
3602 A10	I615 C12	
3603 A10	I616 C12	
3604 A12	I617 D12	
3605 A10	I618 D12	
3606 B10	I619 D12	
3607 B11	I620 E12	
3608 B10	I621 E12	
3609 B12	I622 E12	
3610 B11	I623 F12	
3611 B10	I624 F12	
3612 B9	I625 F12	
3613 B9	I626 F12	
3614 B9	I627 F12	
3615-1 C11	I628 F12	
3615-2 C11	I629 A2	
3615-3 C11	I631 F12	
3615-4 C11	I632 G12	
3617 A11	I633 A2	
3618 B12	I634 A4	
3619 D11	I636 G12	
3620 C10	I637 G12	
3621 D10	I638 G12	
3622 D11	I641 G12	
3623 D11	I642 G12	
3624 D11	I643 G12	
3625 D11	I644 H12	
3626 E11	I645 H12	
3627 E11	I646 H11	
3628 E11	I647 G3	
3629 E11	I648 G2	
3630 E11	I649 H12	
3631-1 F10	I650 I2	
3631-2 F10	I651 H10	
3631-3 F10	I652 G3	
3631-4 F10	I653 H12	
3635-1 G10	I654 I2	
3635-2 G10	I656 H3	
3635-3 F10	I657 B10	
3635-4 F10	I658 I10	
3639-1 G10	I659 I12	
3639-2 G10	I660 I8	
3639-3 G10	I661 I9	
3639-4 G10	I662 D12	
3643-1 H10	I663 B10	
3643-2 H10	I667 G4	
3643-3 G10	I668 D12	
3643-4 H10	I669 E12	
3647 H12	I670 E12	
3648 H11	I671 B12	
3650-1 H8	I672 H12	
3650-2 H8	I673 A12	
3650-3 H8	I674 B12	
3650-4 H8	I675 A12	
3651-1 H8	I676 I12	
3651-2 H8	I677 E12	
3651-3 H8	I678 D12	
3651-4 H8	I679 D12	
3652-1 H9	I680 H11	
3652-2 H9	I681 I12	
3652-3 H9	I682 I11	
3652-4 H9	I683 B12	
3653-1 H9	I684 A9	
3653-2 H9	I685 A9	
3653-3 H9	I687 D2	
3653-4 H9	I688 D4	
3660 G2	I689 D5	

TR 22011_001
300604

Servo Board: Tray Motor Connections

OPU/CHEETAH_QD/DRIVERS/CENTAURUS/POWER-CONN

{RAD,SERVO-COMM,MOTO1,MRN,RX1_MASTER,TX1,A1,A2,CALF,VRIN,D1_TILTN,D2_TLN,D3_REN,D4_FEN,S1_MIRN,S2,FTC,MON1,MON2,RX2,TX2,PPNO,IRQN,PORN,T1,SCL,SDA,S2-XDN,DRIVER-ON,FO-,FO+,VFOO-,VFOO+,RA,VRAOO,SL+,SL-,FOC+,FOC-,TR+,TR-,TRAYSW,SL,VMOTO1O}

DEBUG(0:13)

OPTIONA

1700

CALF, A2, A1, S2-XDN, VRIN, D1_TILTN, D2_TLN, D3_REN, D4_FEN, S1_MIRN, S2, FTC, MON1, MON2, PPNO, TX1, TX2, RX1_MASTER (I721), RX2 (I722), IRQN, PORN, MRN (I723), T1, SCL, SDA

4707

DEBUG(4), DEBUG(0), DEBUG(1), DEBUG(2), DEBUG(3), DEBUG(5), DEBUG(6), DEBUG(7), DEBUG(10), DEBUG(8), DEBUG(12), DEBUG(13), DEBUG(9), DEBUG(11)

L700, L701, L702, L703

I715, I716, I717, I718, I719

OPTIONB

D3V3

3709 10K, 3708 10K, 3711 10K, 3710 10K, 3712 10K

1703 DV

DEBUG(4) I700, DEBUG(0) I701, DEBUG(1) I702, DEBUG(2) I703, DEBUG(3) I704, I705, DEBUG(6) I707, DEBUG(7) I709, DEBUG(8) I711, DEBUG(5) I713

OPTIONB

D3V3

3702 10K, 3703 10K, 3704 10K, 3705 10K, 3706 10K, 3707 10K

Solder Pads

1702

TRAYSW, TR-, TR+

OPTIONA

1705

FO-, VFOO-, FO+, VFOO+, RA, VRAOO, SL, I724, MOTO1, VMOTO1O, SL+, SL-, FOC+, FOC-, RAD, SERVO-COMM, DRIVER-ON

D3V3

3713 10K, 3714 10K, OPTIONB 3715 10K, 3716 10K

JTAG_TRST_CENT I706, JTAG_TDO_CENT I720 3717 33R I714, JTAG_TDI_CENT I710, JTAG_TMS I712, JTAG_TCK I708, JTAG_WE I731, JTAG_RY_BY I732, I735

3718 10K, 3719 10K OPTIONB

JTAG CONECTION

Mechanical holes

0001, 0002

Connection Splitted GND plane

2700 10n, 2701 10n, 2702 10n, 2703 10n, 2704 10n, 2705 10n, 2706 10n, 2707 10n

NOTE:

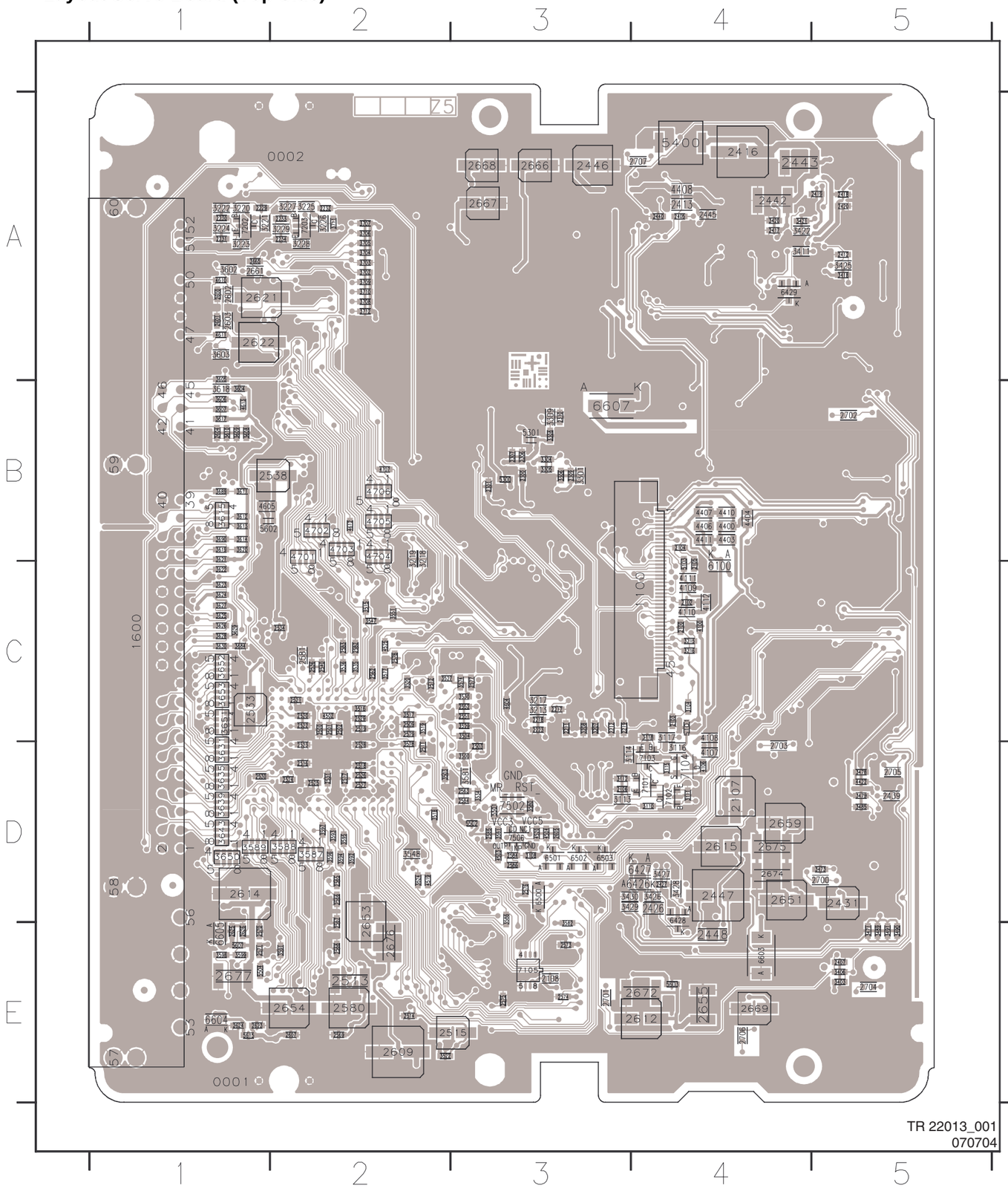
OPTIONA: DENOTES COMPONENT(S) WILL BE MOUNTED BEFORE MASS PRODUCTION

OPTIONB: DENOTES COMPONENT(S) WILL BE MOUNTED WHEN NEEDED

TR 22012_001
300604

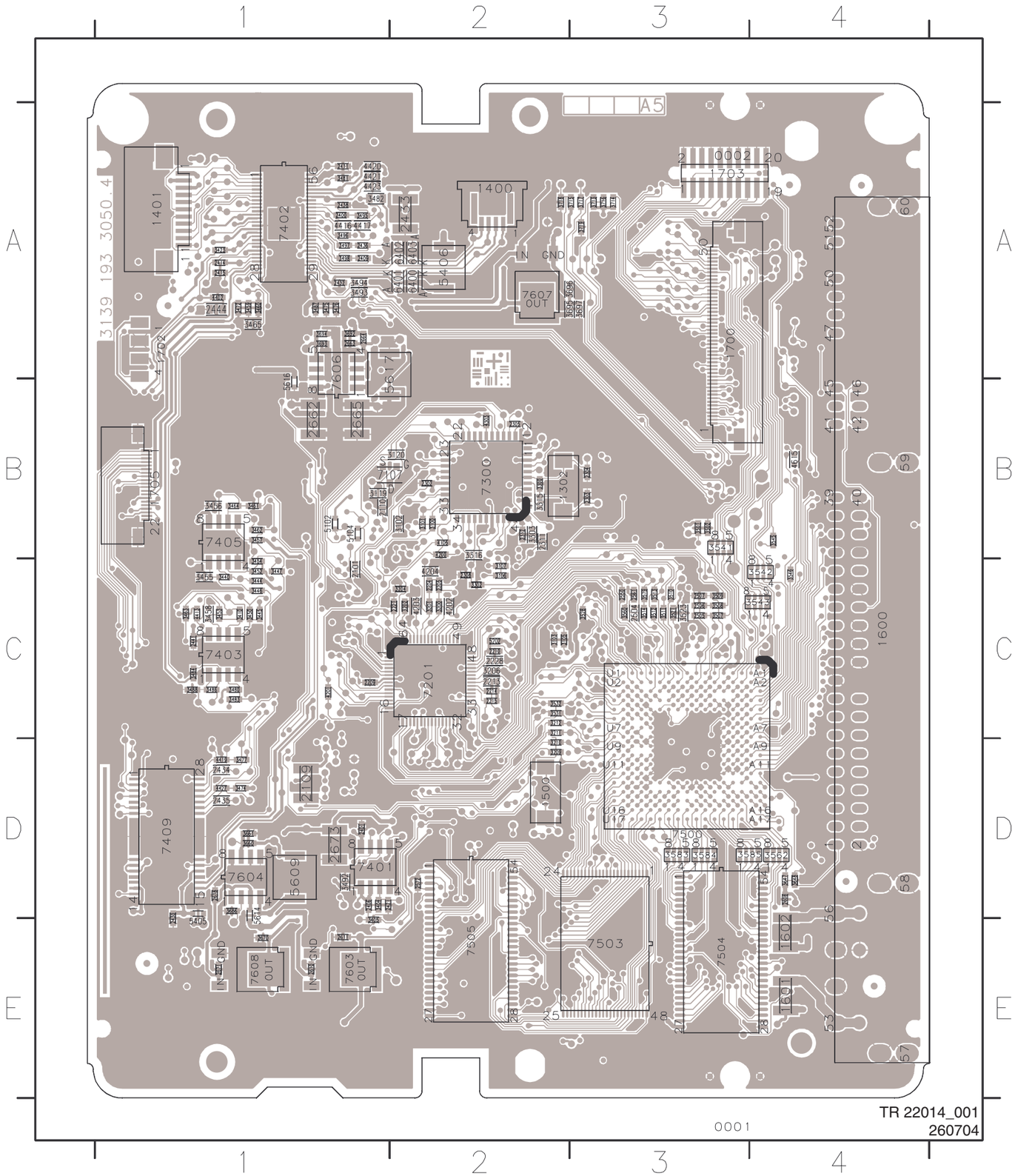
0001 I7
0002 I8
1700 B1
1702 F5
1703 C6
1705 E9
2700 I10
2701 I11
2702 I10
2703 I11
2704 I10
2705 I11
2706 I10
2707 I11
3702 H5
3703 H5
3704 H5
3705 H5
3706 I5
3707 I5
3708 C5
3709 C4
3710 C4
3711 C4
3712 C5
3713 B13
3714 B13
3715 B13
3716 B13
3717 C13
3718 D13
3719 D13
4701-1 B2
4701-2 B2
4701-3 B2
4701-4 C2
4702-1 C2
4702-2 C2
4702-3 C2
4702-4 D2
4703-1 D2
4703-2 D2
4703-3 C2
4703-4 C2
4704-1 E2
4704-2 E2
4704-3 D2
4704-4 E2
4705-1 D2
4705-2 F2
4705-3 F2
4705-4 E2
4706-1 F2
4706-2 F2
4706-3 F2
4706-4 D2
4707 F2
I700 C5
I701 C5
I702 D5
I703 D5
I704 D5
I705 D5
I706 B14
I707 D5
I708 C14
I709 D5
I710 C14
I711 D5
I712 C14
I713 E5
I714 C14
I715 H3
I716 H3
I717 H3
I718 I3
I719 I3
I720 C12
I721 E2
I722 E2
I723 F2
I724 F9
I731 C14
I732 C14
I735 C14
L700 G3
L701 G3
L702 H3
L703 H3

Layout Servo Board (Top Side)



1100 C4	2527 D2	2701 E3	3518 02	3653 C1	6500 D3
1600 C1	2528 D2	2702 B5	3519 C2	3665 A1	6501 D3
2100 C4	2529 C2	2703 D4	3520 C2	3684 C1	6502 D3
2102 C4	2530 D1	2704 E5	3522 E2	3689 B1	6503 D3
2103 C4	2531 D2	2705 D5	3524 02	3690 B1	6603 E4
2104 B4	2533 C1	2706 E4	3527 C2	3702 A2	6604 E1
2105 C4	2534 C2	2707 A4	3529 C3	3703 A2	6605 E1
2106 D3	2536 C2	3104 C4	3530 C3	3704 A2	6607 B3
2107 D4	2538 B2	3108 D3	3534 03	3705 A2	7101 D4
2108 E3	2540 C2	3110 D4	3535 C2	3706 A2	7102 D4
2211 C3	2551 C3	3111 D4	3536 C2	3707 A2	7103 D4
2212 C3	2552 C3	3112 D3	3547 C2	3708 A2	7104 D4
2217 C3	2562 C2	3113 D3	3548 02	3709 A2	7105 E3
2218 C3	2563 D3	3114 D3	3551 C2	3710 A2	7202 A1
2219 C3	2564 D3	3115 D4	3561 03	3711 A2	7203 A2
2223 C3	2565 D2	3116 D4	3574 C3	3712 A2	7502 D3
2229 A1	2566 D2	3117 C4	3577 C2	4100 C4	7506 D3
2230 A1	2567 E2	3118 C4	3578 02	4106 04	
2231 A1	2568 E2	3207 C3	3580 03	4107 D4	
2232 A2	2569 E2	3208 C3	3581 03	4108 C4	
2233 A2	2570 E1	3213 C3	3582 E3	4109 C4	
2234 A2	2571 E1	3215 C4	3586 03	4110 C4	
2300 B3	2573 E3	3216 C4	3587 02	4111 C4	
2301 B3	2574 E3	3217 C3	3588 02	4112 C4	
2306 B3	2575 E3	3218 B2	3589 01	4400 B4	
2307 B3	2576 D3	3219 B2	3591 E2	4403 B4	
2309 B3	2577 C3	3220 A1	3592 02	4404 B4	
2310 B3	2578 C2	3221 A1	3593 02	4406 B4	
2405 A4	2579 C2	3222 A1	3594 02	4407 B4	
2407 E5	2580 E2	3223 A1	3595 02	4408 A4	
2412 A5	2581 C2	3224 A1	3596 02	4410 B4	
2413 A4	2582 C2	3225 A2	3597 02	4411 B4	
2416 A4	2583 C2	3226 A2	3598 E1	4422 D5	
2417 A4	2584 D3	3227 A2	3599 E1	4502 C2	
2418 A5	2585 D3	3228 A2	3602 A1	4503 03	
2419 A5	2586 D3	3229 A2	3603 A1	4504 D3	
2420 A5	2600 A1	3301 B3	3604 B1	4519 D2	
2426 D4	2601 A1	3304 B3	3605 A1	4520 D3	
2427 D4	2602 A1	3305 B3	3606 B1	4525 C2	
2431 D5	2603 A1	3306 B3	3607 B1	4604 C3	
2439 D5	2604 B1	3308 B3	3608 B1	4605 B1	
2440 A4	2605 D3	3309 B3	3609 B1	4610 A1	
2442 A4	2607 E2	3403 E5	3610 B1	4611 A1	
2443 A4	2609 E2	3406 E5	3611 B1	4612 B2	
2445 A4	2612 E4	3411 A4	3612 B1	4613 B1	
2446 A3	2614 D1	3418 A5	3613 B1	4701 B2	
2447 D4	2615 D4	3420 A4	3614 B1	4702 B2	
2448 E4	2621 A1	3421 A4	3615 B1	4703 B2	
2500 C2	2622 A1	3422 A4	3617 B1	4704 B2	
2501 C2	2623 E1	3425 A5	3618 B1	4705 B2	
2502 C2	2624 E1	3426 04	3619 B1	4706 B2	
2503 D3	2625 E1	3427 04	3620 B1	4707 B2	
2509 C2	2626 E1	3428 04	3621 B1	5101 C4	
2511 D2	2651 D4	3429 03	3622 C1	5103 C4	
2512 C2	2653 D2	3430 03	3623 C1	5300 B3	
2513 E2	2654 E2	3471 E5	3624 C1	5301 B3	
2514 E2	2655 E4	3473 05	3625 C1	5400 A4	
2515 E3	2659 D4	3478 05	3626 C1	5501 D3	
2516 D2	2661 A1	3479 05	3627 C1	5502 03	
2517 D2	2666 A3	3485 05	3628 C1	5504 E1	
2518 D2	2667 A3	3489 E5	3629 C1	5602 B1	
2519 C2	2668 A3	3490 E5	3630 C1	5603 E4	
2520 C2	2669 E4	3491 E5	3631 01	5607 E1	
2521 C2	2672 E4	3500 03	3635 D1	5615 E1	
2522 C2	2674 D4	3503 02	3639 D1	6100 C4	
2523 D2	2675 D4	3504 C3	3643 D1	6426 04	
2524 D2	2676 E2	3515 C2	3650 D1	6427 D4	
2525 D2	2677 E1	3516 C2	3651 C1	6428 D4	
2526 D2	2700 D5	3517 C2	3652 C1	6429 A4	

Layout Servo Board (Bottom Side)



1302	B2	3456	B1	6401	A2
1400	A2	3457	B1	6402	A2
1401	A1	3458	C1	6403	A2
1500	D2	3459	A1	7107	B1
1601	E4	3460	A1	7201	C2
1602	E4	3461	B1	7300	B2
1700	A3	3462	B1	7401	D1
1702	A1	3463	C1	7402	A1
1703	A3	3464	B1	7403	C1
1705	B1	3465	A1	7405	B1
2101	C1	3472	A1	7409	D1
2109	D1	3474	D1	7500	D3
2110	B1	3475	A1	7503	E3
2204	C2	3476	A1	7504	E3
2205	C2	3477	D1	7505	E2
2209	C1	3480	C1	7603	E1
2210	C2	3481	A1	7604	D1
2213	C2	3482	A1	7606	A1
2214	C2	3483	C1	7607	A2
2215	C2	3484	C1	7608	E1
2221	C2	3486	C1		
2228	C2	3487	A1		
2302	B2	3488	C1		
2303	B3	3492	D1		
2304	B3	3493	A1		
2305	B2	3494	A1		
2308	C2	3495	A1		
2311	B2	3496	A1		
2312	B2	3497	A1		
2400	A1	3498	A1		
2401	D1	3501	B3		
2406	D1	3502	B3		
2409	A1	3507	C3		
2411	A1	3508	C3		
2414	A1	3509	C3		
2415	A1	3510	C3		
2421	D1	3511	C3		
2430	E1	3512	C3		
2432	A1	3513	C3		
2433	A2	3514	C3		
2434	D1	3521	C3		
2435	D1	3523	C3		
2436	A1	3528	C3		
2438	A1	3531	C2		
2441	C1	3532	C2		
2444	A1	3541	B3		
2504	C3	3542	C4		
2505	C3	3543	C4		
2506	C3	3545	B4		
2507	C3	3546	C4		
2550	C3	3560	C3		
2561	C3	3562	D4		
2572	D2	3579	C3		
2608	D4	3583	D3		
2610	E1	3584	D3		
2611	E1	3585	D4		
2618	D1	3647	D4		
2662	B1	3648	D4		
2663	A1	3660	D1		
2664	A1	3661	D1		
2665	B1	3686	D1		
2670	E1	3692	A1		
2671	E1	3693	A1		
2673	D1	3694	A1		
3100	B2	3695	A2		
3101	B2	3696	A2		
3102	B2	3697	A3		
3103	C2	3713	A3		
3105	C2	3714	A3		
3106	C2	3715	A3		
3107	C2	3716	A3		
3119	B1	3717	A3		
3120	B2	3718	A2		
3200	C2	3719	A3		
3201	C2	4105	B2		
3202	C2	4200	B2		
3204	C2	4201	C1		
3206	C2	4202	C2		
3209	D2	4203	C2		
3210	D2	4204	C2		
3211	C2	4303	B2		
3212	C2	4402	A1		
3300	B2	4413	C1		
3302	C2	4416	A1		
3303	B2	4417	A1		
3315	B2	4419	D1		
3316	B2	4420	A1		
3404	D1	4421	A1		
3405	E1	4423	A1		
3410	C1	4427	D1		
3423	A1	4615	B4		
3440	C1	5102	B1		
3444	C1	5104	B1		
3445	C1	5202	C2		
3446	C1	5405	E1		
3447	C1	5406	A2		
3450	C1	5609	D1		
3452	C1	5614	D1		
3453	C1	5616	B1		
3454	C1	5617	A1		
3455	C1	6400	A2		

8. Alignments, Test Procedures

8.1 Adjust Laser Control

In case of exchanging DVD-M or PWB an adjustment to align OPU and PWB to each other is necessary.

8.1.1 Adjustment Procedure

- Connect the Digital Board to a PC via serial cable (3122 785 90017)
- Start up Hyperterminal or any other terminal program with the correct settings (19200 8-N-1)
- Power on the set
- Call up nucleus 931 of the DSW. The adjustment takes about 30 seconds

Example:
DS:> 931
93100
Test OK @

- Now data within the OPU EEPROM and the FLASH of the PWB are aligned.

8.2 Drive Test

8.2.1 Short Term Test Procedure

Test 1: Disc LVP 12.01 (7104 099 91731) test layer change on track 28 ->31
Duration: 1 minute

When the LVP12.01 disc is loaded and accepted the next steps are:
- Skip to track 29.
- Press next to chapter 30.
- Fast forward to halfway track 30
- Play track 30 till track 31 halfway
- When this part of the disc is played without any still pictures or freeze frames the beamlanding of the OPU is good (the track transition at the beginning of track 31 gives a short still picture but this is normal.)
- Stop the disc.

Test 2: DVD+R blank disc type Ricoh 4X (7104 099 94261)
Duration: 4 minutes

- Record 1 minute
- Press stop
- Open / close
- Play back recorded track

Remark: When this disc is used for 30 recordings the disc appears to be full. But physically the disc is not full and to use also the remaining space on the disc you can do this by deleting the index pictures.

Test 3: CD-RW low reflection audio disc. (7104 099 96581)
Duration: 1 minute

- Play a few seconds from track 1
- Skip to the last track
- Play a few seconds of the last track.
- Stop the disc

8.2.2 Long Term Test Procedure

Following the steps to be taken for all DVD recorders coming in for service to the workshop related to a DVDM failure and which have “No Defect Found”, NDF after a Short Term Test.

In case no defect is found during the “Short Term Test Procedure” the test has to be extended with a burn in test - “Long Term Test Procedure”.
The burn in test described herein should be done with a DVD+RW disc.
Make a recording of 1 to 2 hours on M1/HQ and M2/SP mode.

Remark:
Attention! To prevent scratches the discs should be treated very carefully!
Heavily scratched discs have a bad influence on the test performance and should be replaced.
The technician has to decide by visual inspection the reliability of his test material.

The pictures below show a bad example of discs used too long.

Figure 8-1

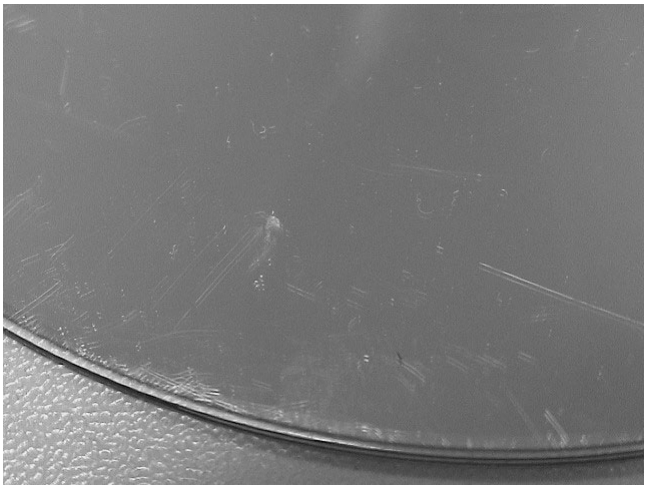
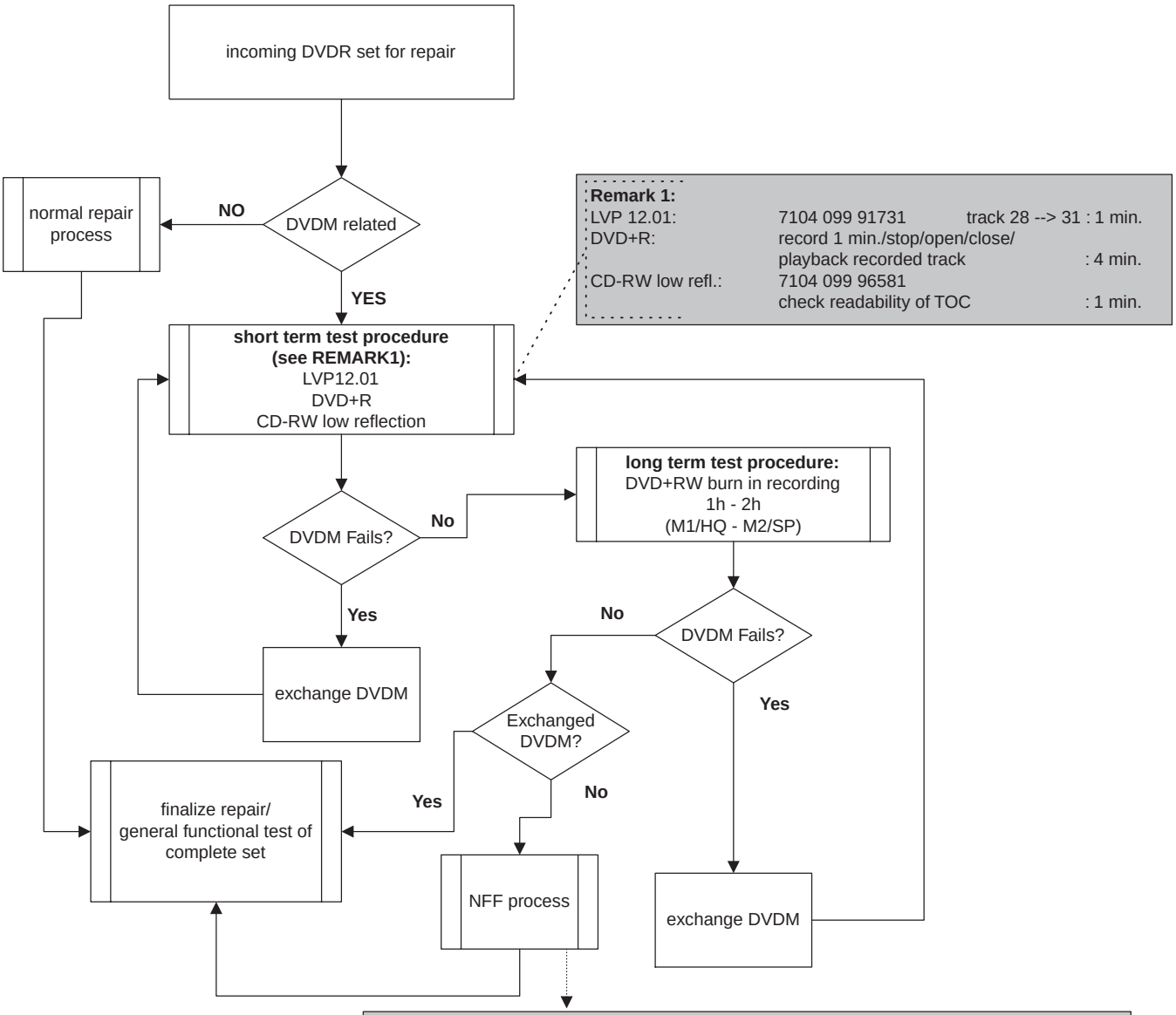


Figure 8-2

Flowchart for test instruction

In the flowchart below it is described how and when the burn in test has to be carried out.



Remark 2:
NFF process:
- 1st step: contact the customer directly by phone or e-mail to discuss the problem of the set
- 2nd step: if contact with the customer is not possible then add a paper with the returned set, informing the customer about the possibility to contact the technician directly.

Following information should be mentioned on the paper:
- name of the technician
- company telephone number (extension) of the technician (for direct contact)
- jobsheet number
- information that the set was tested and found to be within the specs. and no failure occured during the quality and functional check

Figure 8-3

9. Circuit Descriptions, Abbreviation List, and Data Sheets

9.1 General

The VAD8041 module, also known as “AV3.5”, is a Video Recorder Drive with an IDE interface intended for use in a consumer DVD+RW/+R video recorder.
The video recorder engine performs all basic servo tasks. It reads data from and writes data to the disc and controls all functions like tray control, start/stop the disc, tracking, jumping and communicating to the host.

Mechanically, the module consists of a motorized tray loader that contains the dual laser optical pickup unit and a PCBA that contains all the electronics needed to control the drive and interfacing to the MPEG encoder/decoder back-end application.
There is a temperature sensor included in the drive that prevents malfunction or destruction of the drive in case the temperature inside the drive gets too high.

9.2 Overall Block Diagram DVDM & Frontend

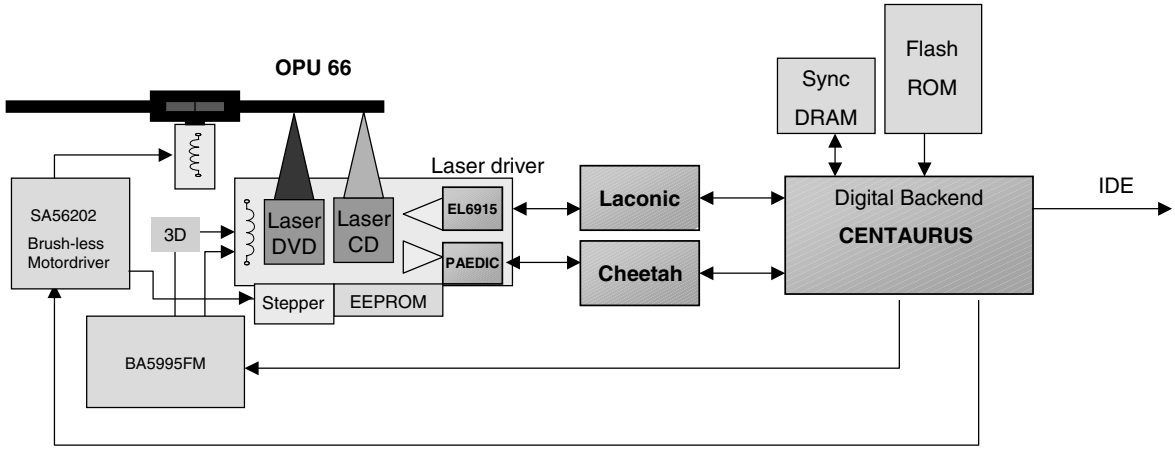


Figure 9-1

9.3 Centaurus

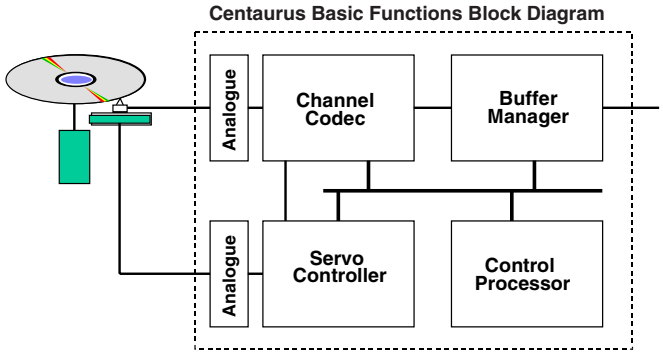


Figure 9-2

The Centaurus, IC7500 is a highly integrated IC that controls all the functions of the drive. It interfaces via the IDE to the MPEG back-end and incorporates the following functions:

- CD/DVD channel decoder/encoder
- CD/DVD data block decoder/encoder
- Buffer Manager
- Digital Servo processor using digital signal processor.
- Drive System microprocessor based on MIPS core.

The MIPS microcontroller uses Flash ROM for the firmware and SRAM to execute the program. SDRAM is provided for the encoding/decoding function block of centaurus. 2 MBytes of data buffer size is available inside the IC for data storage.

9.4 Cheetah

The Cheetah, IC7201 is an analogue pre-processing for the diode signals coming from the OPU. It contains an amplifier with programmable gain that amplifies the RF signal to adapt the output for the different reflectivity of the various discs. The tracking signals are filtered and normalized. In addition the IC contains a timing circuit for the sample and hold circuits and for switching the various blocks between read and write.
Supporting functions such as laser control and offset control are incorporated. Communication to and from the IC is based on a fast two-wire serial bus that works according to the I2C interface protocol.

9.5 Laconic

The main function of the LACONIC, IC7300 is to control the laser power. The IC forms a closed control loop in combination with the Elantec located on the OPU. It compensates aging and temperature of the laser. Furthermore it forms a fingerprint correction loop. It also acts as bridge between IIC and serial bus of the Elantec laser driver on the OPU.

9.6 Optical Pick-up Unit

The OPU66 is a dual laser Optical Pick-up Unit for DVD+RW/+R. It consists of a 3-D actuator for focusing, redial tracking and tilt correction.

- 650nm laser for DVD
- 780nm laser for CD

On the interconnecting flex several electrical components are mounted.

- Elantec programmable laser diode power driver

- Paedic integrated photo detector with programmable gain pre-amplifier
- Eeprom containing a number of values representing adjustments belonging to the OPU.

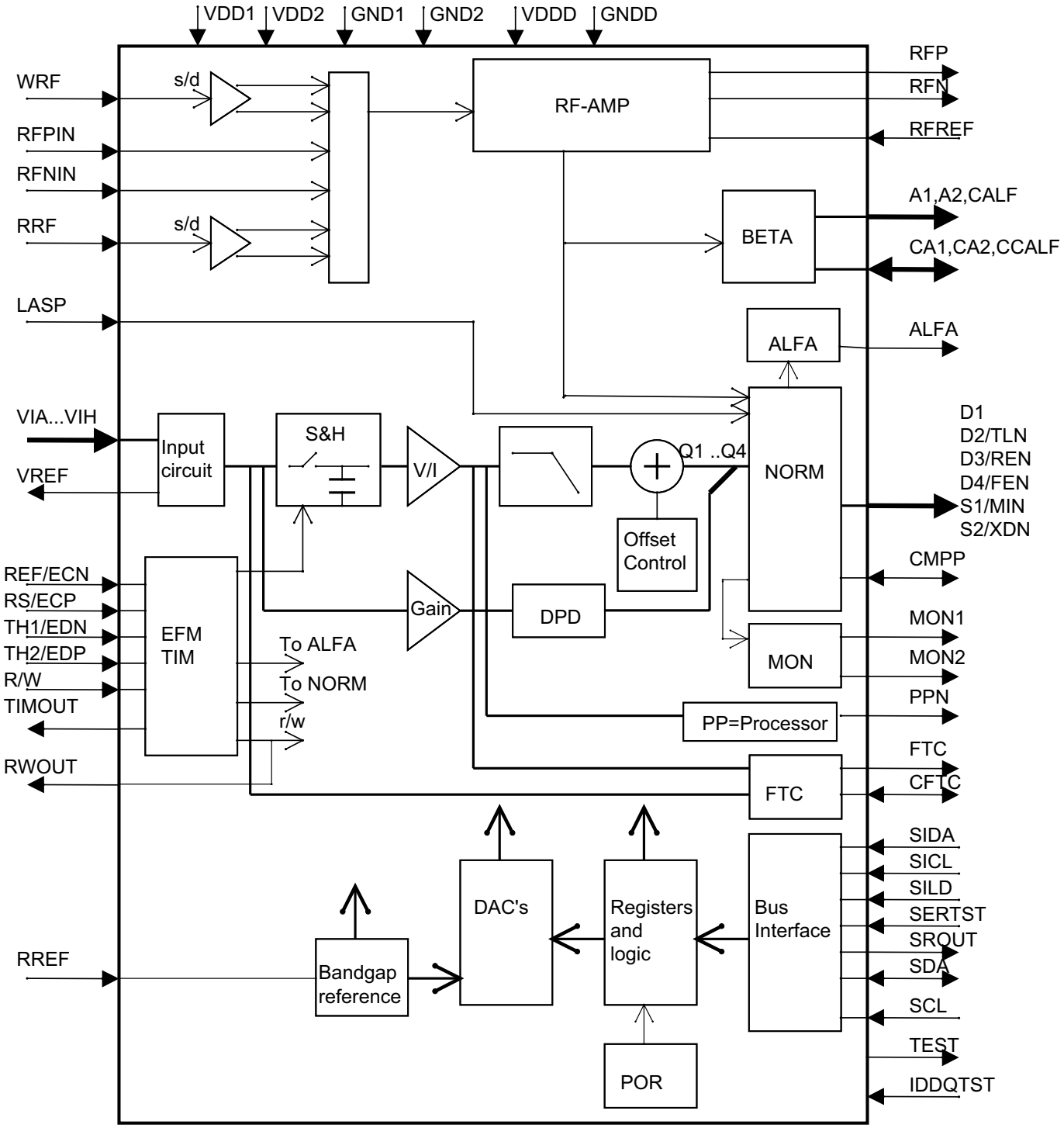
The laser control and diode signal processor ICs together with an EEPROM are mounted on the OPU flex.
The laser control IC generates the DVD laser read and writing signals needed for reading DVD discs and writing DVD+RW / +R discs (write strategies of DVD+RW / +R discs).
The diode signal processor is an analogue pre-processor adapted for the CD and CD-R / RW read function.
The EEPROM contains information about writing current, writing strategies and other parameters belonging to the OPU.

9.7 Motor and Servo drivers

The SA56202 is a one-chip motor driver IC that is capable to drive all motors of CD or DVD systems: spindle, sled and loading motors. The driver for the 3-phase, brushless, hall-commutated spindle motor uses True-Silent PWMTM. This proprietary technology ensures that all 3-phase motor currents are sinusoidal resulting in an optimally silent and power-efficient driver. Internal compensation of the spindle motor's back-EMF enables the driver to operate in current-steering mode without using external power-dissipating sense resistors. The driver for the 2-phase sled stepper motor operates in current-steering PWM mode. In addition the IC contains four full-bridge linear channels that are used to drive the loading motor.
The 3D actuators (focus, tracking and tilt) are driven by IC 7409, BA5995FM.

9.8 IC Servo Board

IC7201, TZA1047: Servo Board, Analogue PReprocessor



Symbol	Pin	Description
VIH	1	Satellite segment H input
GND1	2	Ground
VIC	3	Central segment C input
VIB	4	Central segment B input
GND1	5	Ground
RFNIN	6	Inverse differential RF input / Single-ended RF read input
RFPIN	7	Differential RF input/ Single-ended RF write input
VDD1	8	Positive supply
VID	9	Central segment D input
VIA	10	Central segment A input
VDD1	11	Positive supply
VIE	12	Satellite segment E input
VIG	13	Satellite segment G input
RWOUT	14	R/W signal output
SDA	15	Data input/output I^2C
SCL	16	Clock input I^2C
SILD	17	Strobe line of serial bus interface
SIDA	18	Data line of serial bus interface
SICL	19	Clock line of serial bus interface
TIMOUT	20	EFMTIM test output
R/W	21	External Read/Write signal input
VDDD	22	Positive supply digital part
VSSD	23	digital ground
REF/ECN	24	Reference input for timing signals in EFMTIM bypass mode[1]/ Inverse EFM clock input[2]
RS/ECP	25	RF sampling signal[1]/ EFM clock input[2]
TH1/EDN	26	Segment sampling timing signal[1]/ Inverse EFM data input[2]
TH2/EDP	27	Segment sampling timing signal[1]/ EFM data input[2]
SERTST	28	Enable test mode (Tie to GND or leave open for normal operation)
VDD2	29	Positive supply voltage

Symbol	Pin	Description
GND2	30	Supply ground
RFP	31	RF output voltage, positive
RFN	32	RF output voltage, negative
RFREF	33	Reference voltage for differential RF output common mode level
PPN	34	Output PP voltage
CFTC	35	FTC high pass filter capacitor
FTC	36	FTC output
GND1	37	Supply ground
CA1	38	Beta circuit external capacitor
CA2	39	Beta circuit external capacitor
CCALF	40	Beta circuit external capacitor
RREF	41	Reference resistor to ground
GND1	42	Supply ground
CMPP	43	MPP external capacitor
VDD1	44	Positive supply
MON1	45	Monitor output voltage
MON2	46	Monitor output voltage
S2/XDN	47	Servo output current
S1/MIRN	48	Servo output current
D4/FEN	49	Servo output current
D3/REN	50	Servo output current
D2/TLN	51	Servo output current
D1	52	Servo output current
IDDQTST	53	Select zero dissipation mode (tie to GND for normal operation)
CALF	54	RF average level signal
A2	55	RF bottom level signal
A1	56	RF top level signal
SROUT	57	shift register output for register test mode
ALFA	58	alfa output current
LASP	59	laser power setpoint signal
TEST	60	Test output
RRF	61	Single ended RF read input voltage

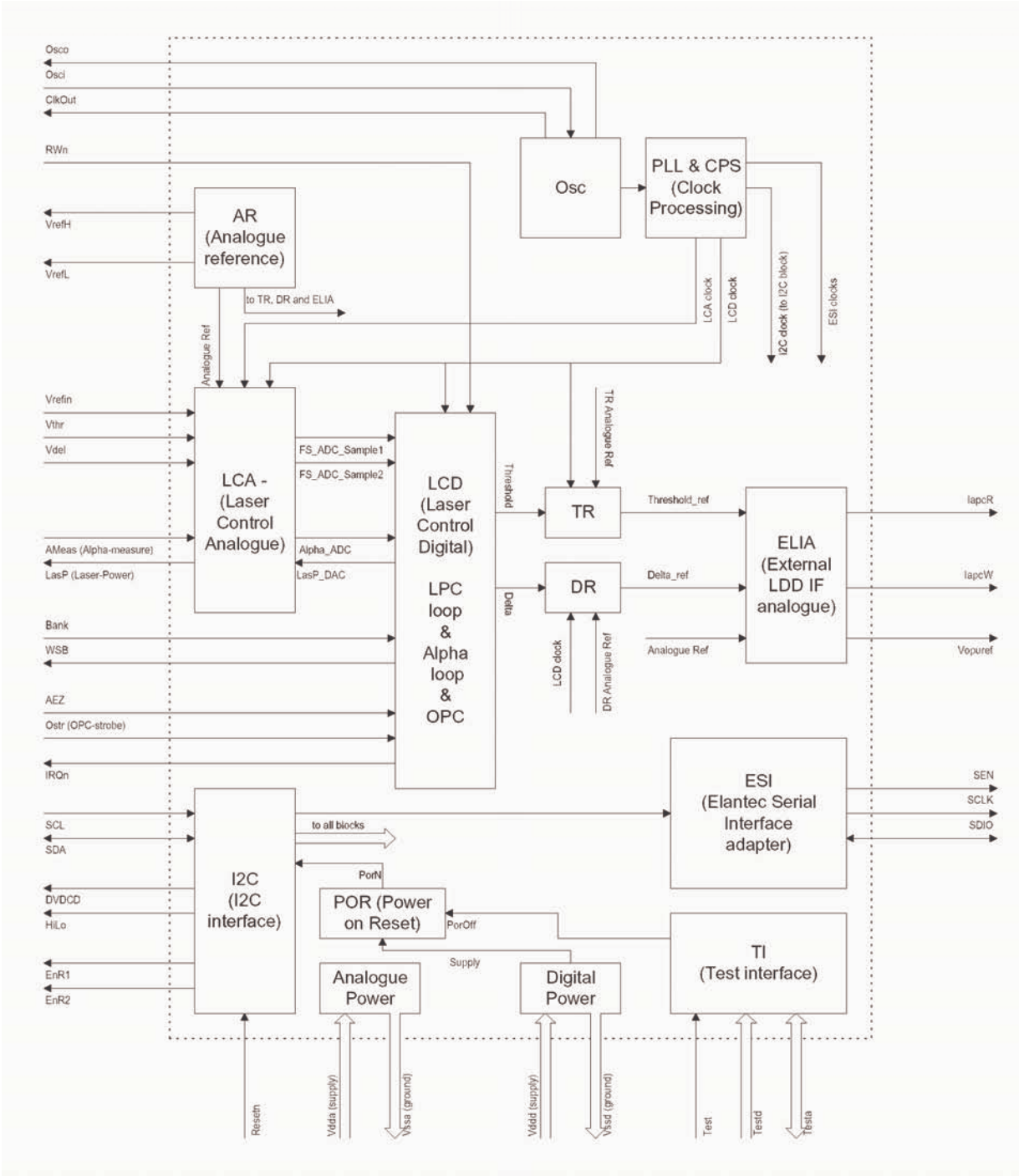
Symbol	Pin	Description
WRF	62	Single ended RF write input voltage
VREF	63	PDIC reference voltage output
VIF	64	Satellite segment F input

[1] Only in EFM bypass mode

[2] EFM clock and data when not in EFM bypass mode.

IC7300, TZA1042: Servo Baord, Laser Power Controller

Block diagram



Pin description

Symbol	Pin	Type	Drive /Thr.	Description
AEZ	1	I hy pd	T	Alpha Error Zero/Alpha Set Zero
V_{DDD3}	2	P	-	Digital Pad Supply
V_{SSD3}	3	P	-	Digital Pad Supply
CLOCKOUT	4	T	M	Buffered Oscillator Output
OSCO	5	AO	A	Output of inverting Amplifier that forms oscillator
OSCI	6	AI	A	Input of inverting Amplifier that forms oscillator
TEST1D	7	I pd	T	Test pin
AMEAS	8	AI	A	Alpha Measure – value of measured disk writing quality
V_{DDA1}	9	P	-	Analogue Supply
V_{SSA1}	10	P	-	Analogue Supply
LASP	11	AO	A	Laser Power – indicates power level
VREFL	12	AO	A	Bandgap Voltage Reference ground connection
VREFH	13	AO	A	Bandgap Voltage Reference output
VDEL	14	AI	A	Voltage input for Delta “laser power”
VTHR	15	AI	A	Voltage input for Threshold “laser power”
VOPUREF	16	AO	A	Reference Voltage for OPU
VREFIN	17	AI	A	Input Reference Voltage for Vthr and Vdel
V_{DDA2}	18	P	-	Analogue Supply
V_{SSA2}	19	P	-	Analogue Supply
TEST1A	20	AB	A	Test pin
IAPCW	21	AO	A	Current Output of Delta Reference
IAPCR	22	AO	A	Current Output of Threshold Reference
TEST2A	23	AB	A	Test pin
ENR2	24	T	M	Programmable Output Flag
ENR1	25	B pd	M/T	Device Initialisation/Programmable Output Flag (must be driven to VDD during reset)
DVDCD	26	T	M	Programmable Output Flag for indicating DVD/CD mode
HILO	27	T	M	Programmable Output Flag for indicating High/Low reflectivity
V_{SSD1}	28	P	-	Digital Pad Supply
V_{DDD1}	29	P	-	Digital Pad Supply
BUSY	30	B	M/T	Busy Enable input from Elantec / Board test IO
SEN	31	B	M/T	Serial Enable output to Elantec / Board test IO
SDIO	32	B	M/T	Serial data input output from/to Elantec / Board test IO
SCLK	33	B	M/T	Busy Enable input from Elantec / Board test IO
WSB	34	B	M/T	Write Strategy Bank – output controls OPU write switching / Board test IO

Pin description...*continued*

Symbol	Pin	Type	Drive /Thr.	Description
IRQN	35	OD	M	Interrupt Request Not – active low interrupt request
OSTR	36	I hy pd	T	OPC Strobe – request step in alpha setpoint / Board test input
RESETN	37	I hy pd	T	Reset Not – active low reset input
RWN	38	B	M/T	Read/Write not – indicates power setpoints/Board test IO
V_{SSD2}	39	P	-	Digital Core Supply
V_{DDD2}	40	P	-	Digital Core Supply
BANK	41	I hy pd	T	CAV setpoint switching input signal / Board test IO
TEST2D	42	I pd	T	Test pin
SDA	43	BOD	M/T	I^2C Serial Data
SCL	44	I	T	I^2C Serial Clock

[1] All supply pins must be connected to the same external power supply voltage

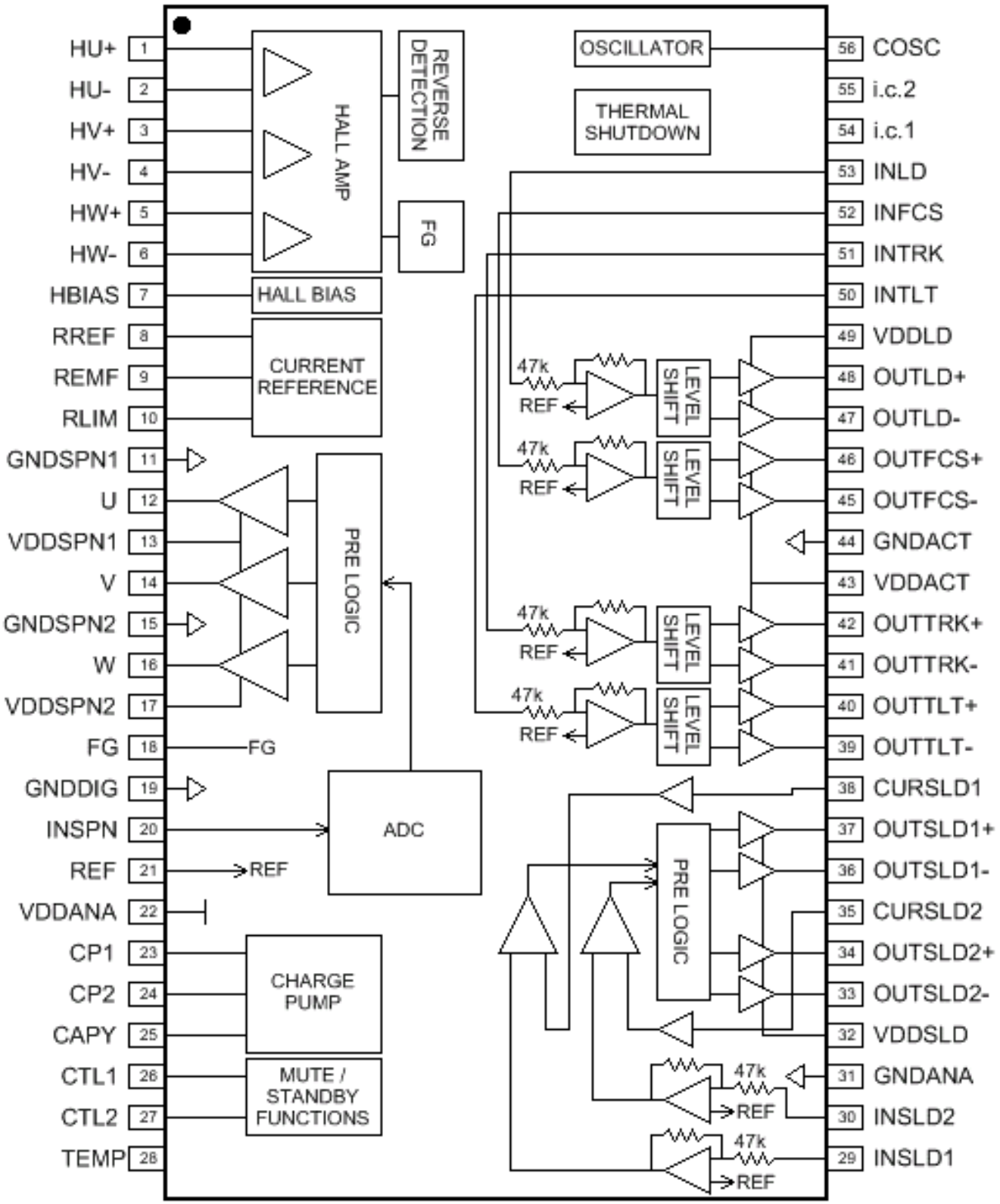
[2] All inputs are 5V tolerant – i.e. they will drive the supply voltage (3.0-3.6V), but will work correctly when interface to a 5V drive device

[3] The pin type definition is given below:

PinType Definition Table

Type	Definition
I	input
O	output
OD	open drain
B	bi-directional
BOD	bi-directional open drain
T	tri-state output
AI	analog input
AO	analog output
AB	analog bi-directional
P	power connection
hy	hysteresis on input
pd	hysteresis on output

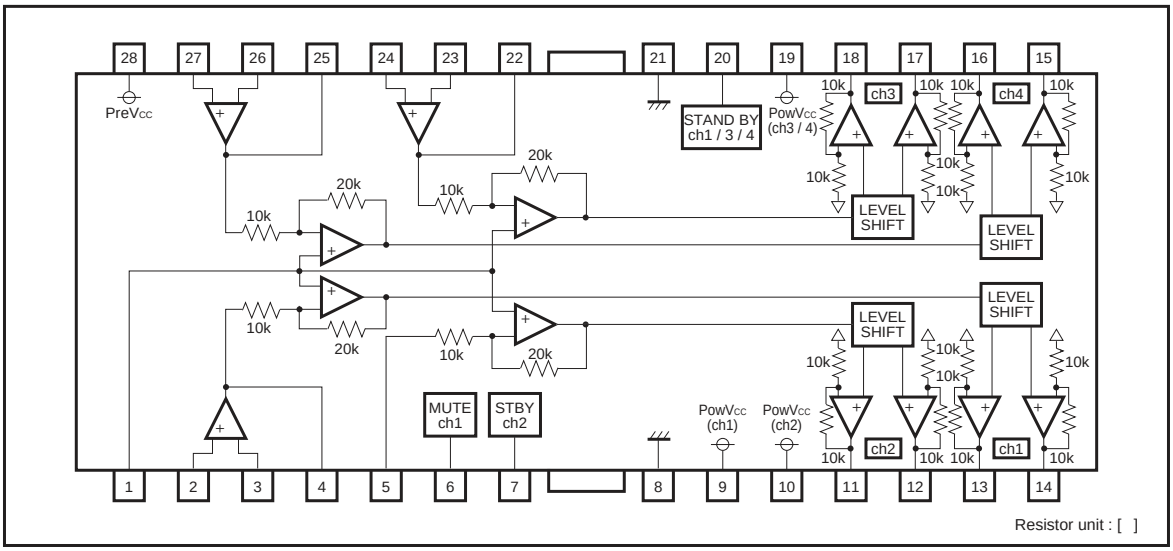
IC7402, SSA56202: Servo Board, Motor Driver



PIN DESCRIPTION

PIN	SYMBOL	DESCRIPTION	PIN	SYMBOL	DESCRIPTION
1	HU+	positive Hall input U	56	COSC	ext. capacitor for int. oscillator
2	HU-	negative Hall input U	55	i.c.2	internally connected
3	HV+	positive Hall input V	54	i.c.1	internally connected
4	HV-	negative Hall input V	53	INLD	loading driver input
5	HW+	positive Hall input W	52	INFCS	focus driver input
6	HW-	negative Hall input W	51	INTRK	tracking driver input
7	HBIAS	Hall element bias	50	INTLT	tilting driver input
8	RREF	ext. res. for current reference	49	VDDLD	loading driver power supply
9	REMF	ext. res. for EMF regeneration	48	OUTLD+	loading driver positive output
10	RLIM	ext. res. for current limit	47	OUTLD-	loading driver negative output
11	GNDSPN1	spindle driver power ground 1	46	OUTFCS+	focus driver positive output
12	U	spindle driver output U	45	OUTFCS-	focus driver negative output
13	VDDSPN1	spindle driver power supply 1	44	GNDACT	actuator drivers power ground
14	V	spindle driver output V	43	VDDACT	actuator drivers power supply
15	GNDSPN2	spindle driver power ground 2	42	OUTTRK+	tracking driver pos. output
16	W	spindle driver output W	41	OUTTRK-	tracking driver neg. output
17	VDDSPN2	spindle driver power supply 2	40	OUTTLT+	tilting driver pos. output
18	FG	frequency generator output	39	OUTTLT-	tilting driver neg. output
19	GNDDIG	ground supply	38	CURSLD1	sled driver 1 current sense
20	INSPN	spindle driver input	37	OUTSLD1+	sled driver 1 positive output
21	REF	reference input voltage	36	OUTSLD1-	sled driver 1 negative output
22	VDDANA	system supply voltage	35	CURSLD2	sled driver 2 current sense
23	CP1	charge pump cap. conn. 1	34	OUTSLD2+	sled driver 2 positive output
24	CP2	charge pump cap. conn. 2	33	OUTSLD2-	sled driver 2 negative output
25	CAPY	charge pump output voltage	32	VDDSLD	sled driver power supply
26	CTL1	driver logic control input 1	31	GNDANA	ground supply
27	CTL2	driver logic control input 2	30	INSLD2	sled driver 2 input
28	TEMP	thermal warning	29	INSLD1	sled driver 1 input

IC7408,7409 BA5995: Servo Board, 4-channel BTL driver
IC actuator and motor drive



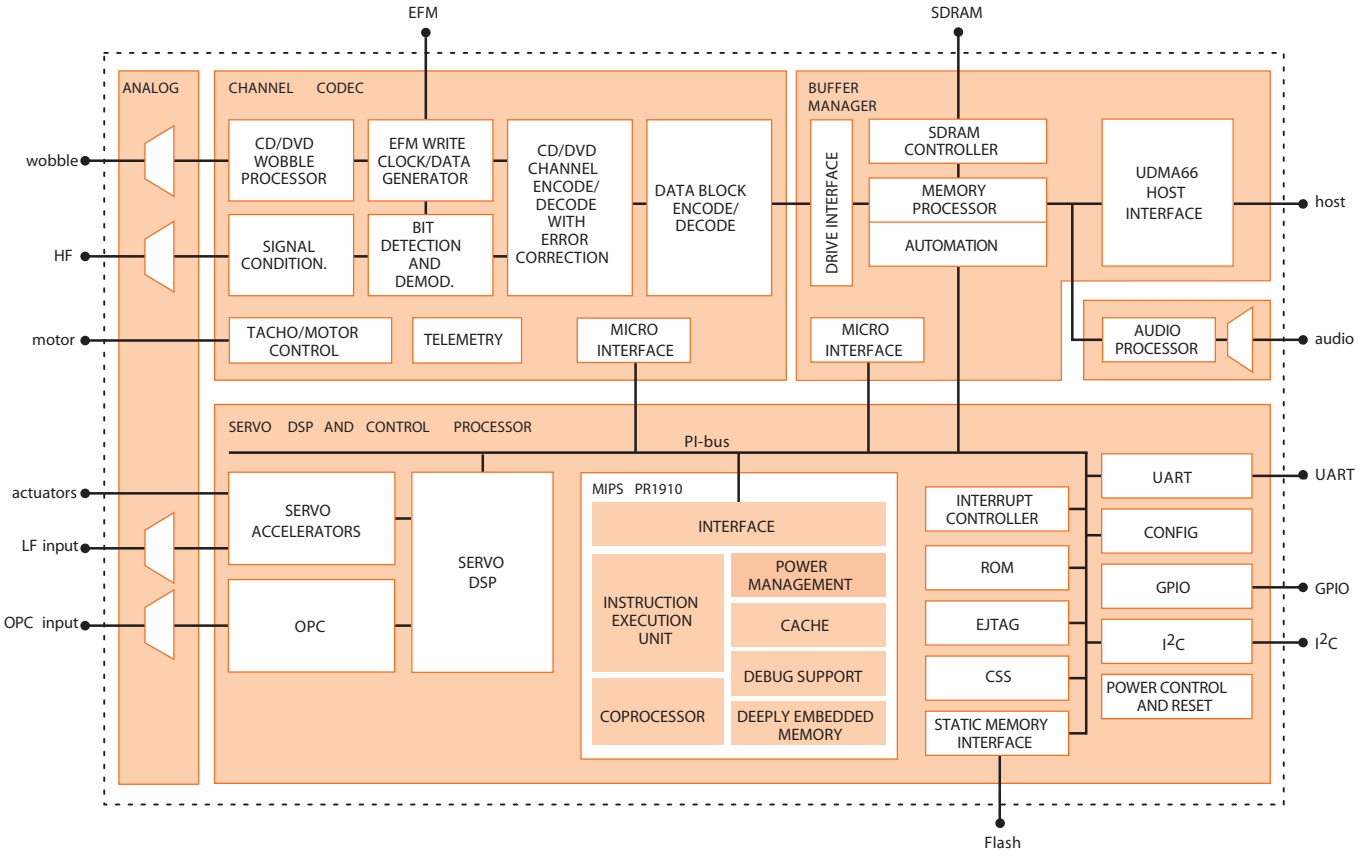
Pin No.	Pin name	Function
1	BIAS IN	Input for bias-amplifier
2	OPIN1 (+)	Non inverting input for CH1 OP-AMP
3	OPIN1 ( )	Inverting input for CH1 OP-AMP
4	OPOUT1	Output for CH1 OP-AMP
5	IN2	Input for CH2
6	MUTE	Input for CH1 mute control
7	STBY2	Input for CH2 stand by control
8	GND	Substrate ground
9	PowVcc1	Vcc for CH1 power block
10	PowVcc2	Vcc for CH2 power block
11	V_{O2} ( )	Inverted output of CH2
12	V_{O2} (+)	Non inverted output of CH2
13	V_{O1} ( )	Inverted output of CH1
14	V_{O1} (+)	Non inverted output of CH1

Pin No.	Pin name	Function
15	V_{O4} (+)	Non inverted output of CH4
16	V_{O4} ( )	Inverted output of CH4
17	V_{O3} (+)	Non inverted output of CH3
18	V_{O3} ( )	Inverted output of CH3
19	PowVcc3	Vcc for CH3/4 power block
20	STBY1	Input for CH1/3/4 stand by control
21	GND	Substrate ground
22	OPOUT3	Output for CH3 OP-AMP
23	OPIN3 ( )	Inverting input for CH3 OP-AMP
24	OPIN3 (+)	Non inverting input for CH3 OP-AMP
25	OPOUT4	Output for CH4 OP-AMP
26	OPIN4 ( )	Inverting input for CH4 OP-AMP
27	OPIN4 (+)	Non inverting input for CH4 OP-AMP
28	PreVcc	Vcc for pre block

Note) Symbol of + and (output of drivers) means polarity to input pin.
(For example if voltage of pin4 high, pin14 is high.)

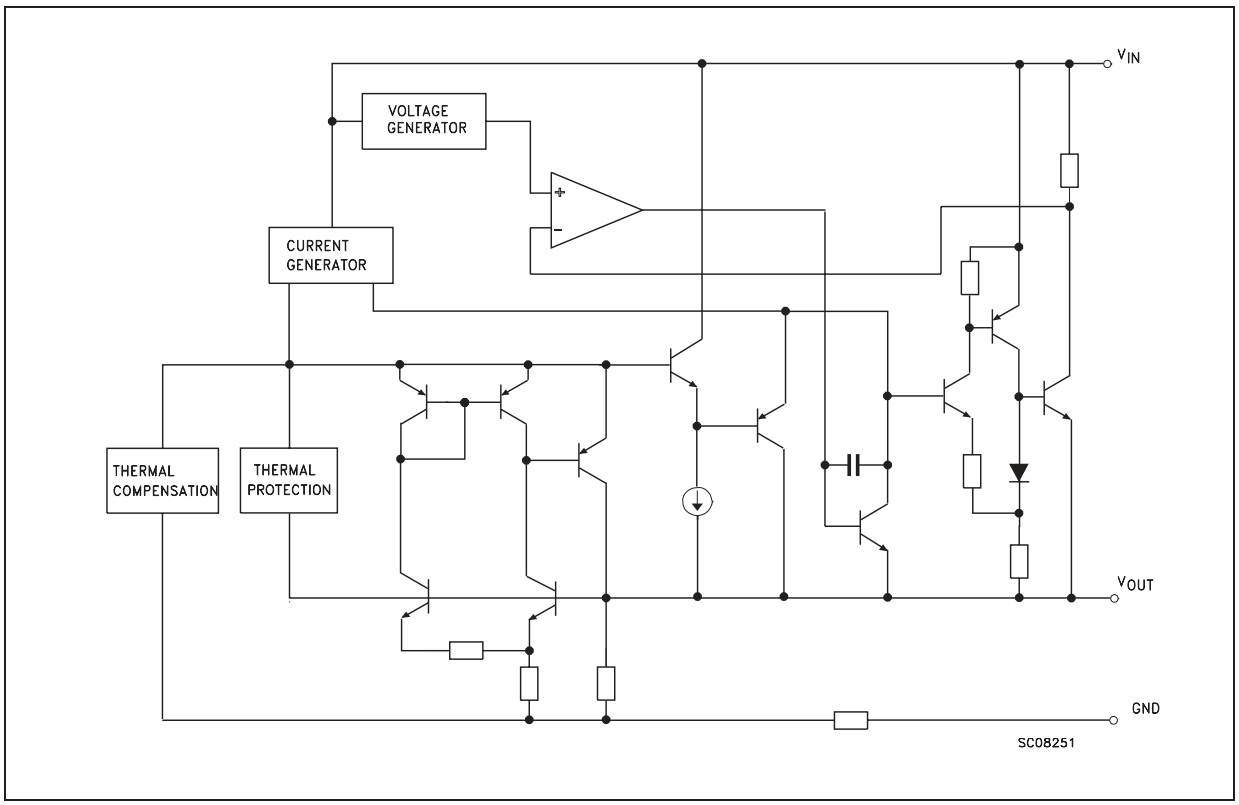
IC7500, PNX7850: Servo Board, Channel Codec/Buffer Manager/Servo Processor and Controller

Nexperia PNX7850 conceptual block diagram



IC7603, LD1117: Servo Board, Voltage Regulator

BLOCK DIAGRAM



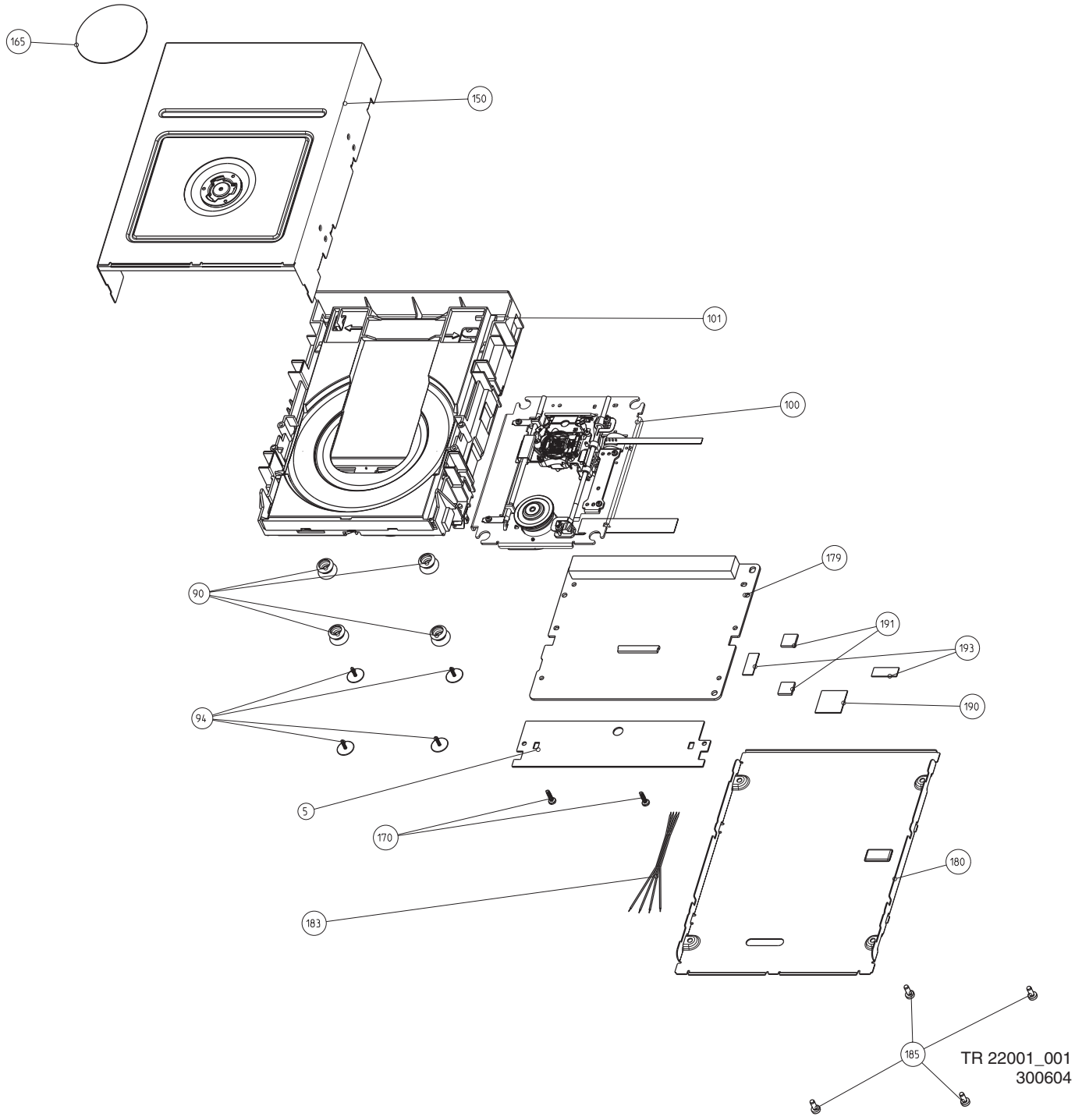
9.9 Abbreviation list

ADC	Analogue to Digital Converter
ADIP	ADdress In Pre-groove
AGC	Automatic Gain Control
CD	Compact Disc
CLV	Constant Linear Velocity
DROPPI	Dvd Rewritable Opu Pre-Processor IC
AM	Amplitude Modulation
BE	Basic Engine
ComPair	Computer aided rePair
CD-DA	CD Digital Audio
CS	Chip Select
DAC	Digital to Analogue Converter
DAIO	Digital Audio Input Output
DENC	Digital Encoder
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSD	Direct Stream Digital
DSP	Digital Signal Processing
DVD	Digital Versatile Disc
EEPROM	Electrical Erasable Programmable ROM
EFM	Eight to Fourteen bit Modulation
FDS	Full Diagnostic Software
HF	High Frequency
I2C	Integrated Ic bus (signals at 5V level)
I2S	Integrated Ic Sound bus (signals at 3.3V level)
IC	Integrated Circuit
IF	Intermediate Frequency
IRQ	Interrupt ReQuest
LADIC	LAser Driver IC
LLD	Loss Less Decoder
LPCM	Linear Pulse Code Modulation
LRCLK	Left/Right CLocK
MACE	Mini All Cd Engine
MPEG	Motion Pictures Experts Group
NC	Not Connected
NVM	Non Volatile Memory: IC containing DVD related data e.g. alignments
OPC	Optimum Power Calibration
OPU	Optical Pickup Unit
PCB	Printed Circuit Board (see PWB)
PCS	Position Control Sledge
PLL	Phase Locked Loop
PCM	Pulse Code Modulation
PCM_CLK	Audio system clock for DAC
PCM_OUTx	Audio serial output data
PSU	Power Supply Unit
PWB	Printed Wiring Board (see PCB)
RAM	Random Access Memory
RGB	Red, Green and Blue colour space
ROM	Read Only Memory
RF	Radio Frequency
S2B	Serial to Basic engine, communication bus between host- and servo processor
SCL	Serial Clock I2C
SCLK	Audio serial bit clock
SDA	Serial Data I2C
SDRAM	Synchronous DRAM
SMC	Surface Mounted Components
S/PDIF	Sony Philips Digital InterFace
SPIDRE	Signal Processing Ic for Dvd REwritable
SRAM	Static Random Access Memory
STBY	STandBY
SVCD	Super Video CD
SW	SoftWare
THD	Total Harmonic Distortion
TTL	Transistor Transistor Logic (5V logic)
uP	Microprocessor
VCD	Video CD
Y/C	Luminance (Y) and Chrominance (C) signal
YUV	Component video

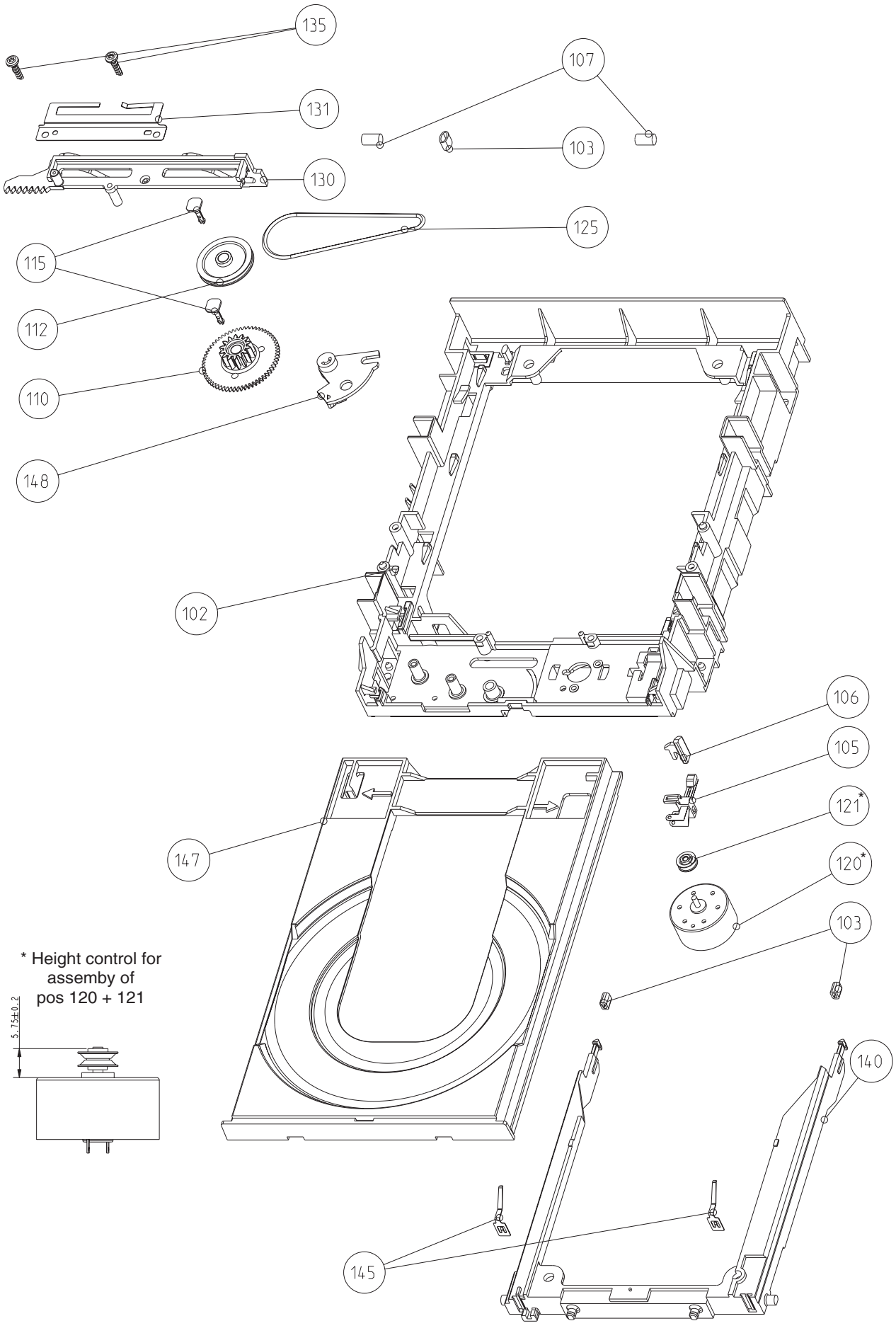
10. Spareparts List

10.1 Exploded Views

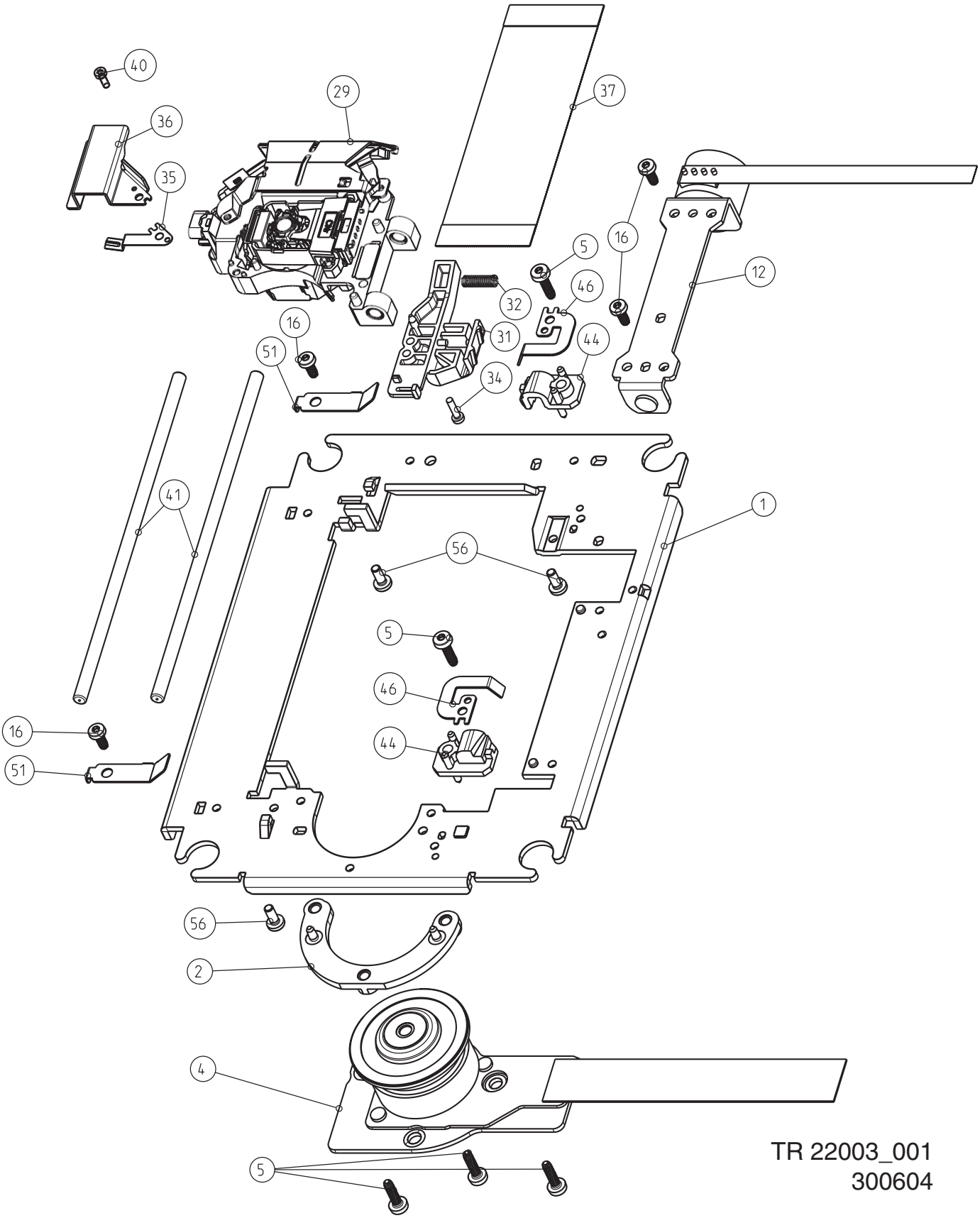
Basic Engine



Loader


135
131
130
115
112
110
148
107
103
125
102
106
105
121*
120*
103
147
140
145
* Height control for assemby of pos 120 + 121
5.75±0.2

DVD-M


40
29
37
36
35
16
5
46
12
32
16
31
44
51
34
41
1
56
5
46
16
44
51
56
2
4
5
TR 22003_001
300604

Mechanical

Various

0001	7104 099 91851	LVP12.01
0002	7104 099 96581	CD-RW LOW REFLECTION AUDIO DISC
0003	7104 099 94261	RICOH +R (4 SPEED) BLANK DISC
0005	3139 194 01581	SEALING STRIP
0090	3104 144 10730	SUSPENSION
0095	3139 198 80010	TRAY SWITCH
0100	9305 022 84101	VAM8041/01
100/12	3104 148 01950	SLEDGE MOTOR
100/37	3104 143 30780	OPU FLEX CABLE 45P 0.5
0101	3104 144 04272	TRAY
0120	3139 198 00620	TRAY MOTOR
0121	3104 144 04980	MOTOR PULLEY, TRAY
0125	3104 144 10121	TRAY MOTOR BELT
0183	3139 191 00200	4-WAY CABLE
0190	3139 194 01541	HEAT SINK PAD (CENTAURUS)
0191	3139 194 01551	HEAT SINK PAD (CHEETAH)
0193	3139 194 01561	HEAT SINK PAD (DRIVER)

Printed Board

Various

1100	2422 025 17821	CON H 45P F 0.50
1302	2422 543 01025	Crystal 16.93 MHz
1400	2422 025 05548	CON H 4P F 1.00
1401	2422 025 18382	CON H 11P F 1.00
1500	2422 543 01025	Crystal 16.93 MHz
1600	2422 033 00396	SOC COMBI H 56P
1601	2122 662 00152	0.18Ω PTC 1812 16V
1602	2122 662 00136	0.21Ω PTC 1812 6V
1700	2422 025 17909	CON BM H 50P F 0.5
1703	3139 190 20051	CON V 2X 10P M 1.27
1705	2422 025 05544	CON H 20P F 0.50

⊣⊢

2100	2238 586 59812	100nF 20-80% 50V 0603
2101	4822 126 13883	220pF 5% 50V
2102	2238 586 59812	100nF 20-80% 50V 0603
2103	2020 552 94427	100pF 5% 50v 0603
2104	2238 586 59812	100nF 20-80% 50V 0603
2105	2238 586 59812	100nF 20-80% 50V 0603
2106	2238 586 59812	100nF 20-80% 50V 0603
2107	5322 124 41945	22µF 20% 35V SMD
2108	2238 586 59812	100nF 20-80% 50V 0603
2109	2022 552 05635	22µF 16V X5R 10%
2110	3198 016 31020	1nF 10% 25V 0603
2204	5322 126 11579	3.3nF 10% 63V
2205	5322 126 11582	6.8nF 10% 63V
2209	2238 586 59812	100nF 20-80% 50V 0603
2210	2238 586 59812	100nF 20-80% 50V 0603
2211	2238 586 59812	100nF 20-80% 50V 0603
2212	2238 586 59812	100nF 20-80% 50V 0603
2213	2238 786 56642	27nF 16V 0603 X7R 10%
2214	5322 126 11583	10nF 10% 50V 0603
2215	5322 126 11583	10nF 10% 50V 0603
2217	3198 017 34730	47nF 16V 0603
2218	5322 126 11583	10nF 10% 50V 0603
2219	2238 586 59812	100nF 20-80% 50V 0603
2221	2238 586 59812	100nF 20-80% 50V 0603
2223	2238 586 59812	100nF 20-80% 50V 0603
2228	5322 126 11583	10nF 10% 50V 0603
2229	4822 126 14249	560pF 10% 50V 0603
2230	5322 126 11582	6.8nF 10% 63V
2231	4822 126 14487	8.2pF 0.5% 50V 0603
2232	4822 126 14249	560pF 10% 50V 0603
2233	5322 126 11582	6.8nF 10% 63V
2234	4822 126 14487	8.2pF 0.5% 50V 0603
2300	2238 586 59812	100nF 20-80% 50V 0603
2301	2238 586 59812	100nF 20-80% 50V 0603
2302	2238 586 59812	100nF 20-80% 50V 0603
2303	4822 122 33752	15pF 5% 50V
2304	4822 122 33752	15pF 5% 50V
2305	2238 916 15641	22nF 10% 25V 0603
2306	2238 586 59812	100nF 20-80% 50V 0603
2307	2238 586 59812	100nF 20-80% 50V 0603
2308	2238 586 59812	100nF 20-80% 50V 0603
2309	2238 586 59812	100nF 20-80% 50V 0603
2310	2238 586 59812	100nF 20-80% 50V 0603
2311	5322 126 11578	1nF 10% 50V 0603
2312	4822 122 33752	15pF 5% 50V
2400	5322 126 11583	10nF 10% 50V 0603
2401	2238 586 59812	100nF 20-80% 50V 0603
2405	5322 126 11583	10nF 10% 50V 0603
2406	2238 786 55648	82nF 10% 16V 0603
2407	2238 586 59812	100nF 20-80% 50V 0603
2409	5322 126 11583	10nF 10% 50V 0603
2411	2020 552 94427	100pF 5% 50v 0603
2412	2238 586 59812	100nF 20-80% 50V 0603
2413	2020 552 96637	10µF 6.3V 0805 X5R
2414	5322 126 11583	10nF 10% 50V 0603
2415	2238 916 15641	22nF 10% 25V 0603
2416	4822 124 12095	100µF 20% 16V
2417	2238 586 59812	100nF 20-80% 50V 0603
2418	4822 126 14238	2.2nF 50V 0603
2419	4822 126 14238	2.2nF 50V 0603
2420	4822 126 14238	2.2nF 50V 0603
2421	4822 126 13193	4.7nF 10% 63V
2426	4822 126 14043	1µF 20% 16V
2427	2238 586 15628	2.7nF 10% 50V 0603
2430	2238 586 59812	100nF 20-80% 50V 0603
2431	4822 124 23002	10µF 20% 16V
2432	2238 586 59812	100nF 20-80% 50V 0603
2433	2022 552 05635	22µF 16V X5R 10%
2434	5322 122 33861	120pF10% 50V
2435	5322 122 33861	120pF10% 50V
2436	5322 126 11583	10nF 10% 50V 0603
2438	2238 586 59812	100nF 20-80% 50V 0603
2439	5322 122 33861	120pF10% 50V
2440	2238 586 59812	100nF 20-80% 50V 0603
2441	2238 586 59812	100nF 20-80% 50V 0603
2442	2022 552 05635	22µF 16V X5R 10%
2443	2022 552 05635	22µF 16V X5R 10%
2444	2022 552 05616	4.7µF 6.3V 0805 X5R
2445	2238 586 59812	100nF 20-80% 50V 0603
2446	5322 124 41945	22µF 20% 35V SMD
2447	4822 124 12095	100µF 20% 16V
2448	2020 552 95812	1µF 1206 X7R 16V 10%
2500	2238 586 59812	100nF 20-80% 50V 0603
2501	2238 586 59812	100nF 20-80% 50V 0603
2502	2238 586 59812	100nF 20-80% 50V 0603
2503	4822 126 13879	220nF 20% 16V
2504	3198 016 31020	1nF 10% 25V 0603
2505	5322 126 11583	10nF 10% 50V 0603
2506	5322 126 11583	10nF 10% 50V 0603
2507	5322 126 11582	6.8nF 10% 63V
2509	4822 126 13881	470pF 5% 50V
2511	4822 126 13881	470pF 5% 50V
2512	4822 126 13881	470pF 5% 50V
2513	2022 552 05635	22µF 16V X5R 10%
2514	2238 586 59812	100nF 20-80% 50V 0603
2515	4822 124 23002	10µF 20% 16V
2516	2238 586 59812	100nF 20-80% 50V 0603
2517	2238 586 59812	100nF 20-80% 50V 0603
2518	2238 586 59812	100nF 20-80% 50V 0603
2519	2238 586 59812	100nF 20-80% 50V 0603
2520	2238 586 59812	100nF 20-80% 50V 0603
2521	2238 586 59812	100nF 20-80% 50V 0603
2522	2238 586 59812	100nF 20-80% 50V 0603
2523	2238 586 59812	100nF 20-80% 50V 0603
2524	2238 586 59812	100nF 20-80% 50V 0603
2525	2238 586 59812	100nF 20-80% 50V 0603
2526	2238 586 59812	100nF 20-80% 50V 0603
2527	2238 586 59812	100nF 20-80% 50V 0603
2528	2238 586 59812	100nF 20-80% 50V 0603
2529	2238 586 59812	100nF 20-80% 50V 0603
2530	2238 586 59812	100nF 20-80% 50V 0603
2531	2238 586 59812	100nF 20-80% 50V 0603
2533	4822 124 23002	10µF 20% 16V
2534	2238 586 59812	100nF 20-80% 50V 0603
2536	2238 586 59812	100nF 20-80% 50V 0603
2538	4822 124 23002	10µF 20% 16V
2540	2238 586 59812	100nF 20-80% 50V 0603
2550	5322 126 11583	10nF 10% 50V 0603
2551	3198 016 31510	150pF 10% 50V 0603
2552	3198 016 31510	150pF 10% 50V 0603
2561	3198 017 34730	47nF 16V 0603
2562	3198 017 34730	47nF 16V 0603
2563	4822 122 33752	15pF 5% 50V
2564	4822 122 33752	15pF 5% 50V
2565	2238 586 59812	100nF 20-80% 50V 0603
2566	2238 586 59812	100nF 20-80% 50V 0603
2567	2238 586 59812	100nF 20-80% 50V 0603
2568	2238 586 59812	100nF 20-80% 50V 0603
2569	2238 586 59812	100nF 20-80% 50V 0603
2570	2238 586 59812	100nF 20-80% 50V 0603
2571	2238 586 59812	100nF 20-80% 50V 0603
2572	2238 586 59812	100nF 20-80% 50V 0603
2573	2238 586 59812	100nF 20-80% 50V 0603
2574	2238 586 59812	100nF 20-80% 50V 0603
2575	2238 586 59812	100nF 20-80% 50V 0603
2576	2238 586 59812	100nF 20-80% 50V 0603
2577	5322 126 11582	6.8nF 10% 63V
2578	3198 017 33330	CER2 0603 X7R 16V 33N
2579	2238 586 59812	100nF 20-80% 50V 0603
2580	5322 124 41945	22µF 20% 35V SMD
2581	2238 586 59812	100nF 20-80% 50V 0603
2582	5322 126 11582	6.8nF 10% 63V
2583	5322 126 11582	6.8nF 10% 63V
2584	2238 586 59812	100nF 20-80% 50V 0603
2585	2020 552 96899	330nF 0603 X5R 16V 10%
2586	2238 586 59812	100nF 20-80% 50V 0603
2600	2222 867 15339	33pF 5% 50V 0603
2601	2222 867 15339	33pF 5% 50V 0603
2602	5322 126 11583	10nF 10% 50V 0603
2603	5322 126 11583	10nF 10% 50V 0603
2604	2238 586 59812	100nF 20-80% 50V 0603
2605	4822 122 33741	10pF 10% 50V
2607	2238 586 59812	100nF 20-80% 50V 0603
2608	2238 586 59812	100nF 20-80% 50V 0603
2609	4822 124 80151	47µF 20% 16V
2610	2238 586 59812	100nF 20-80% 50V 0603
2611	2238 586 59812	100nF 20-80% 50V 0603
2612	5322 124 41945	22µF 20% 35V SMD
2614	4822 124 12095	100µF 20% 16V
2615	5322 124 41945	22µF 20% 35V SMD
2618	2238 586 59812	100nF 20-80% 50V 0603
2621	4822 124 11131	47UF 6.3V
2622	4822 124 11131	47UF 6.3V
2623	2238 586 59812	100nF 20-80% 50V 0603
2624	2238 586 59812	100nF 20-80% 50V 0603
2625	2238 586 59812	100nF 20-80% 50V 0603
2626	2238 586 59812	100nF 20-80% 50V 0603
2651	5322 124 41945	22µF 20% 35V SMD
2653	5322 124 41945	22µF 20% 35V SMD
2654	5322 124 41945	22µF 20% 35V SMD
2655	2022 552 05635	22µF 16V X5R 10%
2659	5322 124 41945	22µF 20% 35V SMD
2661	2238 586 59812	100nF 20-80% 50V 0603
2662	2022 552 05635	22µF 16V X5R 10%
2663	4822 126 13883	220pF 5% 50V
2664	2238 916 15641	22nF 10% 25V 0603
2665	2022 552 05635	22µF 16V X5R 10%
2666	4822 124 23002	10µF 20% 16V
2667	4822 124 23002	10µF 20% 16V
2668	4822 124 23002	10µF 20% 16V
2669	4822 124 23002	10µF 20% 16V
2670	2238 586 59812	100nF 20-80% 50V 0603
2671	2238 586 59812	100nF 20-80% 50V 0603
2672	2022 552 05635	22µF 16V X5R 10%
2673	2022 552 05635	22µF 16V X5R 10%
2674	2022 552 05635	22µF 16V X5R 10%
2675	2022 552 05635	22µF 16V X5R 10%
2676	2022 552 05635	22µF 16V X5R 10%
2677	2022 552 05635	22µF 16V X5R 10%
2700	5322 126 11583	10nF 10% 50V 0603
2701	5322 126 11583	10nF 10% 50V 0603
2702	5322 126 11583	10nF 10% 50V 0603
2703	5322 126 11583	10nF 10% 50V 0603
2704	5322 126 11583	10nF 10% 50V 0603
2705	5322 126 11583	10nF 10% 50V 0603
2706	5322 126 11583	10nF 10% 50V 0603
2707	5322 126 11583	10nF 10% 50V 0603

⊣WW⊢

3100	2322 702 60829	82Ω 5% 0603
3101	2322 702 60829	82Ω 5% 0603
3102	4822 051 30332	3.3kΩ 5% 0.062W
3103	4822 051 30102	1kΩ 5% 0.062W
3104	4822 051 30101	100Ω 5% 0.062W
3105	4822 051 30102	1kΩ 5% 0.062W
3106	4822 051 30102	1kΩ 5% 0.062W
3107	4822 051 30102	1kΩ 5% 0.062W
3108	4822 051 30102	1kΩ 5% 0.062W
3110	4822 051 30103	10kΩ 5% 0.062W
3111	4822 051 30103	10kΩ 5% 0.062W
3112	4822 051 30102	1kΩ 5% 0.062W
3113	4822 051 30102	1kΩ 5% 0.062W
3114	4822 117 12968	820Ω 5% 0.62W
3115	4822 051 30332	3.3kΩ 5% 0.062W
3116	4822 051 30152	1.5kΩ 5% 0.062W
3117	4822 051 30221	220Ω 5% 0.062W
3118	4822 051 30102	1kΩ 5% 0.062W
3119	4822 051 30183	18kΩ 5% 0.062W
3120	4822 051 30221	220Ω 5% 0.062W
3200	4822 051 30101	100Ω 5% 0.062W
3201	4822 051 30101	100Ω 5% 0.062W
3202	4822 051 30103	10kΩ 5% 0.062W
3204	4822 051 30103	10kΩ 5% 0.062W
3206	4822 117 12925	47kΩ 1% 0.063W 0603
3207	4822 051 30103	10kΩ 5% 0.062W
3208	4822 051 30103	10kΩ 5% 0.062W
3209	4822 117 12903	1.8kΩ 1% 0.063W 0603
3210	4822 117 12903	1.8kΩ 1% 0.063W 0603
3211	4822 117 12903	1.8kΩ 1% 0.063W 0603
3212	4822 117 12903	1.8kΩ 1% 0.063W 0603
3213	4822 051 30183	18kΩ 5% 0.062W
3215	4822 051 30759	75Ω 5% 0.062W

3216	4822 051 30759	75Ω 5% 0.062W
3217	4822 051 30333	33kΩ 5% 0.062W
3218	4822 051 30101	100Ω 5% 0.062W
3219	4822 051 30101	100Ω 5% 0.062W
3220	4822 051 30223	22kΩ 5% 0.062W
3221	4822 117 12139	22Ω 5% 0.062W
3222	4822 051 30393	39kΩ 5% 0.062W
3223	4822 117 12968	820Ω 5% 0.62W
3224	4822 051 30101	100Ω 5% 0.062W
3225	4822 051 30223	22kΩ 5% 0.062W
3226	4822 117 12139	22Ω 5% 0.062W
3227	4822 051 30393	39kΩ 5% 0.062W
3228	4822 117 12968	820Ω 5% 0.62W
3229	4822 051 30101	100Ω 5% 0.062W
3300	4822 051 30105	1MΩ 5% 0.062W
3301	4822 051 30103	10kΩ 5% 0.062W
3302	4822 117 12917	1Ω 5% 0.062W 0603
3303	4822 051 30151	150Ω 5% 0.062W
3304	4822 051 30103	10kΩ 5% 0.062W
3305	4822 051 30103	10kΩ 5% 0.062W
3306	4822 051 30103	10kΩ 5% 0.062W
3308	4822 051 30103	10kΩ 5% 0.062W
3309	4822 117 12903	1.8kΩ 1% 0.063W 0603
3315	4822 051 30339	33Ω 5% 0.062W
3316	4822 051 30103	10kΩ 5% 0.062W
3403	4822 051 30103	10kΩ 5% 0.062W
3404	4822 051 30103	10kΩ 5% 0.062W
3405	4822 051 30103	10kΩ 5% 0.062W
3406	4822 051 30102	1kΩ 5% 0.062W
3410	5322 117 13028	12kΩ 1% 0.063W 0603
3411	4822 117 12925	47kΩ 1% 0.063W 0603
3418	4822 117 12917	1Ω 5% 0.062W 0603
3420	4822 051 30123	12kΩ 5% 0.062W
3421	4822 117 12925	47kΩ 1% 0.063W 0603
3422	4822 051 30203	20K00 5% 0,062W
3423	4822 051 30103	10kΩ 5% 0.062W
3425	4822 051 30151	150Ω 5% 0.062W
3426	4822 051 30562	5.6kΩ 5% 0.063W 0603
3427	2322 702 60184	180kΩ 5% 0603
3428	4822 051 30562	5.6kΩ 5% 0.063W 0603
3429	2322 702 60184	180kΩ 5% 0603
3430	4822 051 30393	39kΩ 5% 0.062W
3440	5322 117 13028	12kΩ 1% 0.063W 0603
3444	5322 117 13064	39kΩ 1% 0.063W 0603
3445	5322 117 13028	12kΩ 1% 0.063W 0603
3446	5322 117 13028	12kΩ 1% 0.063W 0603
3447	5322 117 13064	39kΩ 1% 0.063W 0603
3450	5322 117 13064	39kΩ 1% 0.063W 0603
3452	5322 117 13028	12kΩ 1% 0.063W 0603
3453	5322 117 13064	39kΩ 1% 0.063W 0603
3454	5322 117 13028	12kΩ 1% 0.063W 0603
3455	4822 051 30102	1kΩ 5% 0.062W
3456	4822 051 30102	1kΩ 5% 0.062W
3457	5322 117 13064	39kΩ 1% 0.063W 0603
3458	4822 051 30102	1kΩ 5% 0.062W
3459	2322 702 60158	1.5Ω 0603 5%
3460	2322 702 60158	1.5Ω 0603 5%
3461	5322 117 13028	12kΩ 1% 0.063W 0603
3462	5322 117 13064	39kΩ 1% 0.063W 0603
3463	4822 051 30123	12kΩ 5% 0.062W
3464	5322 117 13028	12kΩ 1% 0.063W 0603
3465	4822 051 30103	10kΩ 5% 0.062W
3471	2322 702 60279	27Ω 5% 0.1W 0603
3472	2322 702 60158	1.5Ω 0603 5%
3473	4822 051 30103	10kΩ 5% 0.062W
3474	4822 051 30123	12kΩ 5% 0.062W
3475	2322 702 60158	1.5Ω 0603 5%
3476	2322 702 60158	1.5Ω 0603 5%
3477	4822 051 30123	12kΩ 5% 0.062W
3478	4822 051 30123	12kΩ 5% 0.062W
3479	4822 051 30103	10kΩ 5% 0.062W
3480	4822 051 30103	10kΩ 5% 0.062W
3481	4822 117 12917	1Ω 5% 0.062W 0603
3482	4822 051 20108	1Ω 5% 0.1W
3483	4822 051 30103	10kΩ 5% 0.062W
3484	4822 051 30103	10kΩ 5% 0.062W
3485	4822 051 30103	10kΩ 5% 0.062W
3486	4822 051 30103	10kΩ 5% 0.062W
3487	2322 702 60158	1.5Ω 0603 5%
3488	4822 051 30102	1kΩ 5% 0.062W
3489	2322 702 60279	27Ω 5% 0.1W 0603
3490	2322 702 60279	27Ω 5% 0.1W 0603
3491	2322 702 60279	27Ω 5% 0.1W 0603
3492	4822 051 30102	1kΩ 5% 0.062W
3493	4822 051 30103	10kΩ 5% 0.062W
3494	4822 051 30103	10kΩ 5% 0.062W
3495	4822 051 30109	10Ω 5% 0.062W
3496	4822 051 30109	10Ω 5% 0.062W
3497	4822 051 30109	10Ω 5% 0.062W
3498	4822 051 30109	10Ω 5% 0.062W
3500	4822 051 30562	5.6kΩ 5% 0.063W 0603
3501	4822 051 30472	4.7kΩ 5% 0.062W
3502	4822 051 30272	2.7kΩ 5% 0.062W
3503	4822 051 30472	4.7kΩ 5% 0.062W
3504	4822 051 30472	4.7kΩ 5% 0.062W
3507	4822 051 30102	1kΩ 5% 0.062W
3508	4822 051 30102	1kΩ 5% 0.062W
3509	4822 051 30102	1kΩ 5% 0.062W
3510	4822 051 30682	6.8kΩ 5% 0.062W
3511	4822 051 30682	6.8kΩ 5% 0.062W
3512	4822 051 30682	6.8kΩ 5% 0.062W
3513	4822 051 30682	6.8kΩ 5% 0.062W
3514	4822 117 13632	100kΩ 1% 0603 0.62W
3515	4822 051 30682	6.8kΩ 5% 0.062W
3516	4822 117 13525	24kΩ 1% 0.62W 0603
3517	4822 051 30103	10kΩ 5% 0.062W
3518	4822 051 30103	10kΩ 5% 0.062W
3519	4822 051 30103	10kΩ 5% 0.062W
3520	4822 051 30103	10kΩ 5% 0.062W
3521	2322 704 62202	2.2kΩ 0603 1%
3522	4822 117 12917	1Ω 5% 0.062W 0603
3523	4822 117 12925	47kΩ 1% 0.063W 0603
3524	4822 051 30103	10kΩ 5% 0.062W
3527	4822 051 30103	10kΩ 5% 0.062W
3528	4822 051 30103	10kΩ 5% 0.062W
3529	4822 051 30222	2.2kΩ 5% 0.062W
3530	4822 051 30222	2.2kΩ 5% 0.062W
3531	4822 051 30479	47Ω 5% 0.062W
3532	4822 051 30479	47Ω 5% 0.062W
3534	4822 051 30105	1MΩ 5% 0.062W
3535	4822 051 30103	10kΩ 5% 0.062W
3536	4822 051 30103	10kΩ 5% 0.062W
3541	3198 031 13390	1206 4X 33R PM5 COL
3542	3198 031 13390	1206 4X 33R PM5 COL
3543	3198 031 13390	1206 4X 33R PM5 COL
3545	4822 051 30339	33Ω 5% 0.062W
3546	4822 051 30339	33Ω 5% 0.062W
3547	4822 051 30334	330kΩ 5% 0.062W
3548	4822 051 30103	10kΩ 5% 0.062W
3551	4822 051 30103	10kΩ 5% 0.062W
3560	4822 051 30101	100Ω 5% 0.062W
3561	4822 051 30472	4.7kΩ 5% 0.062W
3562	4822 117 13526	150Ω 5% 0.63W
3574	4822 051 30103	10kΩ 5% 0.062W
3577	4822 051 30103	10kΩ 5% 0.062W
3578	4822 051 30332	3.3kΩ 5% 0.062W
3579	4822 051 30223	22kΩ 5% 0.062W
3580	4822 051 30472	4.7kΩ 5% 0.062W
3581	4822 051 30339	33Ω 5% 0.062W
3582	4822 051 30103	10kΩ 5% 0.062W
3583	4822 117 13526	150Ω 5% 0.63W
3584	4822 117 13526	150Ω 5% 0.63W
3585	4822 117 13526	150Ω 5% 0.63W
3586	4822 051 30008	Jumper 0603
3587	4822 117 13526	150Ω 5% 0.63W
3588	4822 117 13526	150Ω 5% 0.63W
3589	4822 117 13526	150Ω 5% 0.63W
3591	4822 051 30151	150Ω 5% 0.062W
3592	4822 051 30151	150Ω 5% 0.062W
3593	4822 051 30151	150Ω 5% 0.062W
3594	4822 051 30151	150Ω 5% 0.062W
3595	4822 051 30151	150Ω 5% 0.062W
3596	4822 051 30151	150Ω 5% 0.062W
3597	4822 051 30151	150Ω 5% 0.062W
3598	4822 051 30151	150Ω 5% 0.062W
3599	4822 051 30151	150Ω 5% 0.062W
3602	4822 117 13632	100kΩ 1% 0603 0.62W
3603	4822 117 13632	100kΩ 1% 0603 0.62W
3604	4822 051 30103	10kΩ 5% 0.062W
3605	4822 051 30102	1kΩ 5% 0.062W
3606	4822 051 30471	470Ω 5% 0.062W
3607	4822 051 30471	470Ω 5% 0.062W
3608	4822 051 30102	1kΩ 5% 0.062W
3609	4822 051 30221	220Ω 5% 0.062W
3610	4822 051 30221	220Ω 5% 0.062W
3611	4822 051 30103	10kΩ 5% 0.062W
3612	4822 051 30103	10kΩ 5% 0.062W
3613	4822 051 30103	10kΩ 5% 0.062W
3614	4822 051 30103	10kΩ 5% 0.062W
3615	2350 035 10829	ARV24 4X 82R PM5
3617	4822 051 30471	470Ω 5% 0.062W
3618	4822 051 30102	1kΩ 5% 0.062W
3619	2322 702 60829	82Ω 5% 0603
3620	4822 051 30103	10kΩ 5% 0.062W
3621	4822 051 30103	10kΩ 5% 0.062W
3622	4822 117 12139	22Ω 5% 0.062W
3623	2322 702 60829	82Ω 5% 0603
3624	4822 051 30103	10kΩ 5% 0.062W
3625	4822 117 12139	22Ω 5% 0.062W
3626	2322 702 60829	82Ω 5% 0603
3627	4822 051 30103	10kΩ 5% 0.062W
3628	2322 702 60829	82Ω 5% 0603
3629	4822 051 30103	10kΩ 5% 0.062W
3630	4822 117 12139	22Ω 5% 0.062W
3631	3198 031 13390	1206 4X 33R PM5 COL
3635	3198 031 13390	1206 4X 33R PM5 COL
3639	3198 031 13390	1206 4X 33R PM5 COL
3643	3198 031 13390	1206 4X 33R PM5 COL
3647	4822 051 30103	10kΩ 5% 0.062W
3648	2322 702 60829	82Ω 5% 0603
3650	3198 031 11030	1206 4X 10K PM5 COL R
3651	3198 031 11030	1206 4X 10K PM5 COL R
3652	3198 031 11030	1206 4X 10K PM5 COL R
3653	3198 031 11030	1206 4X 10K PM5 COL R
3660	4822 051 30683	68kΩ 5% 0.062W
3661	4822 051 30154	150kΩ 5% 0.062W
3665	4822 051 30101	100Ω 5% 0.062W
3684	4822 051 30103	10kΩ 5% 0.062W
3686	4822 051 30331	330Ω 5% 0.062W
3689	2322 702 60829	82Ω 5% 0603
3690	4822 117 12139	22Ω 5% 0.062W
3692	4822 051 30472	4.7kΩ 5% 0.062W
3693	4822 117 11817	1.2kΩ 1% 1/16W
3694	4822 051 30392	3.9kΩ 5% 0.063W 0603
3695	2322 704 61201	120Ω 0603 1%
3696	2322 704 65601	560Ω 1% 0603
3697	5322 117 13036	1.2kΩ 1% 0.063W 0603
3702	4822 051 30103	10kΩ 5% 0.062W
3703	4822 051 30103	10kΩ 5% 0.062W
3704	4822 051 30103	10kΩ 5% 0.062W
3705	4822 051 30103	10kΩ 5% 0.062W
3706	4822 051 30103	10kΩ 5% 0.062W
3707	4822 051 30103	10kΩ 5% 0.062W
3708	4822 051 30103	10kΩ 5% 0.062W
3709	4822 051 30103	10kΩ 5% 0.062W
3710	4822 051 30103	10kΩ 5% 0.062W
3711	4822 051 30103	10kΩ 5% 0.062W
3712	4822 051 30103	10kΩ 5% 0.062W
3713	4822 051 30103	10kΩ 5% 0.062W
3714	4822 051 30103	10kΩ 5% 0.062W
3715	4822 051 30103	10kΩ 5% 0.062W
3716	4822 051 30103	10kΩ 5% 0.062W
3717	4822 051 30339	33Ω 5% 0.062W
3718	4822 051 30103	10kΩ 5% 0.062W
3719	4822 051 30103	10kΩ 5% 0.062W
4100	4822 051 30008	Jumper 0603
4105	4822 051 30008	Jumper 0603
4106	4822 051 30008	Jumper 0603
4107	4822 051 30008	Jumper 0603
4108	4822 051 30008	Jumper 0603
4109	4822 051 30008	Jumper 0603
4110	4822 051 30008	Jumper 0603
4111	4822 051 30008	Jumper 0603
4112	4822 051 30008	Jumper 0603
4200	4822 051 30008	Jumper 0603
4201	4822 051 30008	Jumper 0603
4202	4822 051 30008	Jumper 0603
4203	4822 051 30008	Jumper 0603
4204	4822 051 30008	Jumper 0603
4303	4822 051 30008	Jumper 0603
4400	4822 051 20008	Jumper 0805
4402	4822 051 30008	Jumper 0603
4403	4822 051 20008	Jumper 0805
4404	4822 051 20008	Jumper 0805
4406	4822 051 20008	Jumper 0805
4407	4822 051 20008	Jumper 0805
4408	4822 051 20008	Jumper 0805
4410	4822 051 20008	Jumper 0805
4411	4822 051 20008	Jumper 0805
4413	4822 051 30221	220Ω 5% 0.062W
4416	4822 051 30008	Jumper 0603
4417	4822 051 30008	Jumper 0603
4419	4822 051 30008	Jumper 0603
4420	4822 051 30008	Jumper 0603
4421	4822 051 30008	Jumper 0603
4422	4822 051 30008	Jumper 0603
4423	4822 051 30008	Jumper 0603
4427	4822 051 30008	Jumper 0603
4502	4822 051 30008	Jumper 0603
4503	4822 051 30008	Jumper 0603
4504	4822 051 30008	Jumper 0603
4519	4822 051 30008	Jumper 0603
4520	4822 051 30008	Jumper 0603
4525	4822 051 30008	Jumper 0603
4604	4822 051 30008	Jumper 0603
4605	4822 051 20008	Jumper 0805
4610	4822 051 30008	Jumper 0603
4611	4822 051 30008	Jumper 0603
4612	4822 051 30008	Jumper 0603
4613	4822 051 30008	Jumper 0603
4615	4822 051 30008	Jumper 0603
4707	4822 051 30008	Jumper 0603
4xxx	2350 035 91001	ARV24 4X JUMPER

⏦

5101	2422 549 44991	0603 EMI 100MHZ 600R
5102	2422 549 44991	0603 EMI 100MHZ 600R
5103	2422 549 44991	0603 EMI 100MHZ 600R
5104	3198 018 51090	10µH 10% 0603
5202	2422 549 44991	0603 EMI 100MHZ 600R

5300	2422 549 44991	0603 EMI 100MHZ 600R
5301	2422 549 44991	0603 EMI 100MHZ 600R
5400	2422 536 00501	D62LCB 10µF PM20
5405	2422 549 44991	0603 EMI 100MHZ 600R
5406	2422 536 00501	D62LCB 10µF PM20
5501	2422 549 44991	0603 EMI 100MHZ 600R
5502	2422 549 44991	0603 EMI 100MHZ 600R
5504	2422 549 44991	0603 EMI 100MHZ 600R
5602	2422 549 44991	0603 EMI 100MHZ 600R
5603	2422 549 44991	0603 EMI 100MHZ 600R
5607	2422 549 45322	0603 EMI 100MHZ 150R
5609	2422 536 00501	D62LCB 10µF PM20
5614	2422 549 44991	0603 EMI 100MHZ 600R
5615	2422 549 45322	0603 EMI 100MHZ 150R
5616	2422 549 44991	0603 EMI 100MHZ 600R
5617	2422 536 00593	D62LCB 47µF 20%

6100	4822 130 11397	BAS316
6400	9340 571 37115	PMEG1020EA
6401	9340 571 37115	PMEG1020EA
6402	9340 571 37115	PMEG1020EA
6403	9340 571 37115	PMEG1020EA
6426	9965 000 20150	1N4148WS SOD-323
6427	9965 000 20150	1N4148WS SOD-323
6428	5322 130 31928	BAS16
6429	5322 130 31928	BAS16
6500	4822 130 81637	PMLL4148L
6501	5322 130 31928	BAS16
6502	5322 130 31928	BAS16
6503	5322 130 31928	BAS16
6603	9322 168 86685	SK14
6604	4822 130 11522	UDZ15B
6605	9322 159 72685	MM3Z6V2
6607	9322 189 14668	SL12

7101	5322 130 60159	BC846B
7102	5322 130 60159	BC846B
7103	5322 130 60159	BC846B
7104	9340 547 21215	BSH205
7105	9352 697 76118	LM75ADP
7107	9965 000 17814	2N7002E
7201	9352 713 79557	TZA1047HL
7202	5322 130 42718	BFS20
7203	5322 130 42718	BFS20
7300	9352 713 77157	TZA1042HL
7401	5322 209 82941	LM358D
7402	9352 735 89118	SA56202TW
7403	5322 209 82941	LM358D
7405	5322 209 82941	LM358D
7409	9322 164 64668	BA5995FM
7500	9352 737 02557	PNX7850E_Z_M2A
7502	9322 186 84685	MAX6352SVUK
7503	3139 198 00790	PB AV3.5
7504	9322 166 67668	MT48LC4M16A2TG-7E
7505	9322 205 94671	UPD4416016G5-A15-9JF
7506	9322 184 07685	PST3642N
7603	4822 209 17398	LD1117DT33
7604	9352 610 38118	TEA1207T_N1
7606	9322 191 07668	L5970D
7607	9322 144 97668	LD1117DT
7608	9322 197 17668	LD1117-1.8V-A

Philips Consumer Electronics Company

A Division of Philips Electronics North America Corporation

Service Solutions Group

Philips Consumer Electronics Company
Service Solutions Group
Technical Publications Dept.
P.O. Box 555, 401 E. Old Andrew Johnson Hwy.
Jefferson City,TN 37760